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THE SHADOW AND CERTAIN CONDITIONS OF ACCURACY IN SKIASCOPY.

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THE number of the factors that take part in the formation of the shaded area in the patient's pupil commonly spoken of as the shadow, and the varying share which they take in that formation in different eyes and under different conditions in the same eye, makes the subject somewhat complex and difficult to understand. Writers on skiascopy have hitherto, with a few exceptions, contented themselves with a somewhat crude outline of its optical theory and some attention to certain more important details of its practical application. As these become better understood points of less practical importance will claim attention.

One of these points, of which there should be a better understanding, is the formation of the shadow. A factor in this is the shadow of the observer's iris limiting the diffusion circles formed on the retina when the point of reversal is too near the observer's eye to allow of his focussing the rays coming from the patient's retina. This has been discussed by Dr. Carl Weiland in the *Medical News*, October 12, 1895. His demonstration regarding it constitutes an addition of real value to the literature of skiascopy. But it has not the primary and general importance that he seems to attach to it; and what he puts forward as "important points usually overlooked, or even entirely misunderstood, not only by the practicing skiascopist, but also by authoritative writers" challenge the radical criticism here offered.

His first point is the dogmatic assertion that in practicing skiascopy "the observer must keep his eyes accommodated for the pupil of the patient." In practicing skiascopy one wishes to see as clearly as possible the movements of light and shade in the patient's pupil, and no student of the subject needs to be told that perfect focussing of the thing looked at is essential to the best vision. From near the point of reversal the pupillary margin may be the only definite thing about the pupil to be focussed. But the statement that the observer *must* accommodate for the pupil of the patient, if intended to have the same force as the statement that he must correct his ametropia and relax his accommodation when measuring refraction by the direct method with the ophthalmoscope, is not correct.

When from the observed eye, or the lens before it, the rays of light emerge divergent the observer will naturally (and should) accommodate, not for the patient's pupil, but for the erect virtual image behind the eye from which these rays appear to come; and when they emerge so convergent as to form an erect aerial image far enough in front of the observer to allow him readily to accommodate for it, he will (and should) do so. Again, when the observer is seeking to bring out most distinctly the band-like appearance of

regular astigmatism he will naturally (and properly) accommodate for the divergence of the rays in the meridian perpendicular to the band, and not for the patient's pupil. In short the student of skiascopy, in the effort to see most clearly the movements he has to watch, will properly adjust his accommodation to the varying needs of the test, without any special instruction on this point, if only he be not misinformed and wrongly directed.

Dr. Weiland thinks it strange that "no allusion is made to this very important condition of accuracy in the recent monograph by Jackson." It might with equal force be urged that no allusion has been made to the absolute necessity for the skiascopist to keep open his own eye and to direct its visual line toward the eye of the patient. These are quite as important as the other, and as likely to be overlooked. The description of something to be seen, and especially a description indicating that it is not always easy to see, implies the need for the optical adjustment of the eye of the observer to the ordinary conditions of accurate vision; and for the practice of skiascopy no other optical adjustment of the observer's eye is needed.

Another of Dr. Weiland's points is: "The light-area has then (with the observer's eye accommodated for the patient's pupil) exactly the shape of the patient's pupil, round or otherwise, as the case may be, and remains perfectly stationary throughout the test. The shadow alone moves." This seems to mean that by light-area Dr. Weiland understands the illuminated pupil of the patient, or its projection on the observer's retina. I use the term light-area, and understand other writers on skiascopy to use it to indicate the luminous *part* of the pupil, while the shadow in this connection means the non-luminous part of the pupil. Of these, as watched in the shadow test, it cannot properly be said that one moves and the other does not. Strictly speaking, what is seen to move is the boundary between light and shadow. So long as the whole pupil is occupied by light-area, or so long as it is wholly occupied by shadow, no motion can be perceived. Only when a portion of the

pupil is light-area and a part of it is shadow is motion perceptible; and then it is the boundary separating light from shadow that is seen to move.

Again it is asserted: "The shadow is produced by the iris of the observer." Under the conditions assumed for Dr. Weiland's demonstration this is true. But it is not true of all the conditions that arise in the ordinary clinical use of skiascopy; and even for the limited case of which it is true it is not the only way of expressing the truth. Dr. Weiland is seriously in error in criticising Nettleship, Swanzy, Noyes, Hartridge, Parent and myself for directing attention to a different phase of the phenomenon in question; for this other phase is more general and more intimately related to the essential practical facts of skiascopy. To illustrate: As I sit by my lamp a shadow falls upon the floor. It is proper to say that my body produces that shadow, as Dr. Weiland says that the iris of the observer produces the shadow on his retina. But it is also proper, also good English, to say that the lamp flame throws the shadow on the floor. We speak of the shadows cast by the sun, the moon, the peculiar shadows of the arc light, etc., and in the same sense it is proper to speak of the shadow on the observer's retina as being thrown there by the light area on the patient's retina Even if this latter mode of expression be considered inferior, its employment is not sufficient ground for supposing ignorance or misunderstanding of the phenomena alluded to on the part of the user. If my lamp be moved back and forth, while I sit still, the shadow on the floor is seen to move. In this I remain passive, the movement of the shadow is directly dependent on the movement of the lamp. In a manner precisely similar, in the case we are discussing, the observer's iris remains stationary and the movement of shadow on his retina is directly dependent on the movement of light on the patient's retina. Even in the particular case assumed by Dr. Weiland the existence and movement of the shadow on the observer's retina are dependent directly and actively on the existence and movement of the boundary of the light-area on the

patient's retina. And when, under conditions differing from those assumed by Dr. Weiland, the observer's eye is focussed, not for the patient's pupil, but for the erect or inverted image of the patient's retina, the observer's iris has nothing to do with the shadow on his retina, while the boundary of the light-area on the patient's retina preserves its essential relation to that shadow and its movement.

Another proposition is: "The usual crescentic shape of the shadow has its cause in the usual circular form of the pupil of both patient and observer." This, too, is true only for the limited conditions assumed by Dr. Weiland when the light-area is a diffusion area produced by rays from a single luminous point of the retina, the pencil being limited by one or both of the circular openings, the pupils of the patient and the observer. When, however, the source of light is not a single luminous point, but composed of many such points constituting a luminous area, and in skiascopy it is never a single luminous point, but is always an area of considerable size, the diffusion area of each luminous point is overlapped by the diffusion areas due to other luminous points, and the resultant light-area takes a shape between that of the area that serves as the source of light and that of the single diffusion area. At the same time the overlapping of diffusion areas belonging to illuminated points by the diffusion areas of neighboring non-luminous points causes the margin of the light-area to become indefinite and to show a gradual transition from light to darkness. Hence it happens that the form of the light-area on the observer's retina, the form of the apparent light-area in the patient's pupil, never corresponds exactly to the form of the diffusion area as demonstrated by Dr. Weiland, but is at all times somewhat due to the form of the light-area on the patient's retina. As the point of reversal is approached the influence of the shape of the diffusion area increases; as the point of reversal is departed from the influence of the shape of the diffusion area diminishes. When the observer's eye comes to be focussed on the erect or inverted image of the patient's retina the influ-

ence of the form of the diffusion area is entirely eliminated, and when in addition the rays from the source of light are accurately focussed upon the retina of the patient the form of the light-area in the patient's pupil is entirely independent of the form of the patient's or the observer's pupil, and is dependent wholly on the form and size of the source of light, the refraction of the patient's eye as to aberration and astigmatism, and the distance of the observer from the point of reversal.

As Weiland observes in a foot-note, when the observer's pupil is larger than the sight-hole in his mirror it is the latter that limits the pencil of rays and shapes the diffusion area, and the observer's pupil does not enter into the matter at all. Practically this is always the case. This being the case it is easy for one to determine by experiment that the sight-hole may, under certain circumstances, influence somewhat the form of the shadow, but that this influence is of very little practical importance. To do this take a piece of looking-glass and make a skiascopic mirror of it by scraping away the silvering so as to make a square or triangular sight-hole, which may be larger than would be proper for the ordinary practice of skiascopy, but which must be kept within the limits of the observer's pupil. Then compare the form of the shadows seen through this sight-hole with those seen through the ordinary circular sight-hole. At most distances from the point of reversal, and for some eyes at all distances, the form of the light-area will be the same through both openings. But in other eyes, when close to the point of reversal, one can see through the angular sight-hole a slightly angular light-area and shadow.

Named in the order of their usual practical importance, the factors which determine the form of the light-area and shadow in the pupil are: (1) The refraction of the eye, especially regular and irregular astigmatism and aberration taken in connection with the distance of the observer from the point of reversal; (2) the form and size of the source of light employed; (3) the form of the patient's pupil and of the sight-hole of the mirror.

Finally, Weiland states: "Skiascopy is the more accurate the larger the pupil of the patient (provided there is not much aberration in the peripheral zone) and the smaller the pupil of the observer." This is substantially correct; only one must remember that the periphery of the fully dilated pupil always does present enough aberration and irregular astigmatism to destroy its value in this connection, and that it is the sight-hole in the mirror and not the pupil of the observer that limits the diffusion circles on the observer's retina. Years ago I pointed out that: "It is the matter of the sight-hole that really limits the exactness possible with the shadow-test." (*Ophthalmic Review*, 1890). It does this not only in the way Dr. Weiland has indicated, but also by causing the feeble illumination or non-illumination of the most important part of the patient's retina, and by its circles of diffusion still farther diminishing the contrast of light and shadow. But we must have a sight-hole, and one large enough to let us watch the movements of light and shadow in the pupil and on the patient's face. I find one about *two millimeters* in diameter most generally satisfactory. The darker the room in which skiascopy is practiced and the freer the sight-hole is from reflections, or points of light diffusion, the smaller it may be. Fortunately the size mentioned is small enough to allow accuracy of the test sufficient for all practical purposes.

ACQUIRED AMBLYOPIA.

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OCCASIONALLY a patient appears in the office or in the clinic whose vision, in one or both eyes, is far below the normal standard and cannot be improved by glasses, while at the same time no cause can be detected in the eye to explain the lowered vision. This condition is known as amblyopia. When no reliable evidence of previously good vision is furnished and there are no accompanying symptoms referable to retro-bulbar trouble or hysteria the amblyopia is usually considered congenital. It very rarely happens that a manifestly acquired amblyopia appears with no accompanying symptoms to indicate its origin, and I therefore think the following case will prove of interest:

A young man 20 years of age consulted me in September, 1892, to have his eyes examined preparatory to entrance into the Massachusetts Institute of Technology. At that time the vision of each eye was $\frac{20}{15}$; there was no astigmatism, manifest hypermetropia, or muscular insufficiency, and only one diopter of latent hypermetropia. His only ocular trouble was a certain amount of chronic conjunctivitis. He became an indefatigable student in the Institute and in the following April returned to me with this history: One night, during January, he passed from 8 p. m. to 7 a. m. doing some very fine mechanical drawing. He was then seized with a pain in his right eye which radiated back-

ward and down into the neck. This pain persisted and about March a less amount of pain appeared in the left eye. His description of this pain was that after reading a while he had a "drawing sensation in both eyes, more marked in the right, as though they would fall out." At the time of his second visit to me, April 1893, the vision of his right eye was reduced to $\frac{20}{80}$, while that of the left was as before, $\frac{20}{15}$. No improvement of the vision of the right eye could be obtained with glasses, the refractive condition was the same as formerly and nothing could be found within the eye to furnish the slightest explanation of the loss of vision. The tension of the eyeball was normal, the pupils were equal in size and not dilated, and the field of vision was perfect. There was red-green blindness of both eyes, of which the patient stated that he had been aware for several years.

This patient I took in consultation to two other ophthalmologists, Drs. David Webster and S. M. Payne, and to a neurologist, Dr. J. Leonard Corning, but nothing was elucidated to explain the amblyopia. Dr. Webster assured me that but for my examination of the eye a few months previously he would have had no hesitancy in pronouncing it a case of congenital amblyopia. The patient's general condition at this time was not very good. He was suffering from the results of several month's intense application and overwork without proper recreation and rest. To meet this indication chlorid of gold was prescribed as a tonic and a pair of +1D. glasses ordered for use when reading.

I have seen the patient since then at intervals of several months and noticed a very slight gradual improvement. At no time has it been worse than at the previous examination. In August 1895 the vision was $\frac{20}{40}+$. The refractive and ophthalmoscopic condition still remained the same.

Acute glaucoma, or inflammation of any portion of the eye, which may be suggested by the history of severe pain and lowered vision, is certainly excluded by the perfect field, normal tension and absence of abnormal pupillary and ophthalmoscopic appearances.

We have, then, a case of amblyopia which is known not to have been in existence four months previous to an unusual and abnormal tax upon the faculty of vision and which was noticed subsequent to this unusual and abnormal

tax. It was and is accompanied by no associated symptom except that of pain radiating from the eye for a few months after this occurrence, and has very slowly improved up to the present time. What may be the cause of the amblyopia is an interesting subject for speculation.

Two theories can be advanced to account for its origin; one that it was caused by a change in the nerve elements at some part of the visual tract induced by the severe and prolonged strain to which the eyes were subjected, the other that it is caused by hysteria. In regard to the first theory I think the location of a possible change in the nerve elements may be narrowed by exclusion to a single point in the optic tract and that, if I show this to be true, this fact shows the theory worthy of consideration, while in regard to the second I think it will appeal to many as the probably correct one, because I am unable to positively exclude hysteria, if indeed hysteria may admit of positive exclusion in any case.

A nervous impulse is supposed to be transmitted through a nerve by a molecular disturbance propagated from point to point along its course. A moderate stimulus increases the irritability of a nerve, but repetition of the stimulus for a length of time induces exhaustion shown by a lowering or a loss of irritability. According to Bernstein, quoted by Thacher, the nerve is exhausted more slowly than the muscle, and recuperates more slowly. When a tetanizing current of electricity is applied to a portion of a nerve until exhaustion ensues, the irritability returns much later at the point of stimulation than elsewhere. The stimulus which induces the transmission of nervous impulses through the optic nerve is the impingment of rays of light upon the retina, and especially upon that portion known as the fovea centralis. If this stimulus is applied continually for a sufficient length of time to a single point, the irritability of the nerve may confidently be expected to be lessened, and the transmission of nervous impulses interfered with, particularly from that point.

The use of the eye for eleven consecutive hours at fine mechanical drawing necessitated the application of a constant, active stimulus to the optic nerve, impinging upon the fovea centralis, and after this there was found an inability on the part of the nerve to transmit, or of the brain to receive, nerve impulses generated by as moderate an amount of stimulus as before. This it seems to me may be fairly termed a state of exhaustion. As this state has improved but slightly in nearly three years, the molecular disturbance which characterizes exhaustion may have been of a more permanent character than usual. This molecular change would seem likely to be greatest at one end or the other of the nerve tract, because at these points would probably be the greatest resistance to the transmission of the nerve impulses. Gray matter is more highly organized and delicate than white, hence it is natural to turn first to this in search of a possible lesion. But, if such a molecular change were to take place in the visual center in the cuneus, the nerve fibers leading thence to both eyes would probably be affected and the blurring of vision would be binocular and hemianopic. Even if we conceive of this molecular change as affecting fibers which pass from the center to one eye alone, the resulting affection of vision would still be hemianopic in character because the fibers entering the eye from the other cuneus would not be affected. Again a lesion either in the cortex or in the course of the nerve, which could reduce central vision to such an extent, would, of necessity, as it seems to me, reduce the acuity of peripheral vision, and, as this is very slight in the outermost parts of the field, would also cause a narrowing of the field of vision. But in this case there was no trace of hemianopsia or narrowness of the field of vision, and the possibility of a lesion in the cortex or in the optic nerve proper is thus excluded. The retina alone of the optic tract remains to be considered. No scotoma or dulling of vision was detected in any part of the field except the central area, and this limits the situation of the possible lesion to one point, the fovea centralis, upon which

the stimulus of focussed rays of light from observed objects directly impinge This point is the most sensitive of the retina; its tissues are most delicate and highly organized, and specially adapted for the reception of focussed rays. It is necessarily in constant irritation while attention is closely and continuously directed to the appearance of small objects. According to the quotation just made from Bernstein the irritability of an exhausted nerve returns much later at the point of stimulation than elsewhere. If this is true of other nerves I know of no reason why it should not be true of nerves of special sense, and we must consider whether it is possible or not that hyperstimulation may have obtunded the sensitiveness of the nerve elements supplying the fovea centralis, and so produced a central amblyopia.

I present this hypothesis for consideration with the utmost diffidence because I am aware that I am reasoning from analogy, a most delusive form of logical process which has occasioned many errors and cannot be conclusive. I have not found it advanced heretofore, neither have I found any record of experiments upon the optic nerve which would confirm it, but it appears to me both logical and possible.

Although both eyes were subjected equally to the active stimulation it is perfectly in accord with analagous processes elsewhere in the body that the nerve elements in one fovea should recover their irritability readily after a strain which might obtund the sensibility of the corresponding elements in the other fovea. In other words, the molecular disturbance characteristic of exhaustion might be temporary in one place though permanent in the other, and then monocular amblyopia would be produced. When the sensitiveness of the nerve elements at the fovea is abolished from any cause, central vision is abolished and a central scotoma can be detected, but if this sensitiveness were only lowered central vision would remain though of reduced acuity, and unless the acuity were reduced below that of the retina immediately surrounding the fovea, a scotoma could not be

detected. As the nerve elements of the rest of the retina would be unaffected the field would remain normal. There would not be likely to be any trace of hemianopsia, or of hemiamblyopia, or any change in the fundus which could be observed with the ophthalmoscope, and there would be no abnormality in the reflexes of the eye because the lesion would be too slight to affect them.

These conditions are exactly the ones present in this case, and the improvement in vision which I have noticed during two and a half years has been steady though slight, not varying from time to time in the sense of being worse occasionally.

As I said before, the diagnosis of hysterical amblyopia cannot be excluded. The red-green blindness would be a strong point in favor of this diagnosis if it had appeared coincidently with the amblyopia, but I am convinced that the patient spoke truly when he assured me that he had never been able to distinguish these colors. As far as I know there were no other symptoms suggestive of hysteria. At the time of his examination Dr. Corning detected no hysterical symptoms, and, though he persisted in his studies, at no time, to my knowledge, did any symptoms develop which were referable to hysteria.

For these reasons I advance the opinion, not positively but rather tentatively, that the amblyopia in this case was due to exhaustion of the nerve elements at the fovea centralis.

22 E. Forty-first St.

PLASTIC CYCLITIS, WITH LOCALIZED EXUDATION, OCCURRING IN EARLY SECONDARY SYPHILIS, AND RESEMBLING GUMMA OF THE CILIARY BODY.

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IT had not been my fortune, prior to the observation of the following case, to see a lesion resembling gumma occurring in any part of the body in the earlier stages of syphilis.

The patient, a young man 28 years of age, came under my care in November, 1895, through the kindness of Dr. J. E. Black. He had always enjoyed good health, with the exception of the loss of a leg by accident two or three years ago. He recovered promptly from the amputation, and has had no further illness of any kind until the present.

In August, 1895, he contracted syphilis. Though not seen by Dr. Black at this time, there can be no doubt of the nature of the lesion from the history of its development and appearance, and subsequent course. When I saw him about nine or ten weeks after the primary sore, he had a well-marked papulo-squamous syphilide, affecting the arms and legs principally, the trunk moderately and the face slightly, with general lymphatic enlargement. The left eye was the seat of a violent plastic iridocyclitis. The iris was greenish and the aqueous so cloudy as to prevent a clear view of the pupil. On the outer edge of the pupil there

was a circumscribed plastic exudation on the iris, of dirty white color, and having very much the appearance of gumma of the iris. The eye was intensely injected, tender and painful, especially at night. He had received no treatment. Hot applications and aelopia were ordered for the eye, and mercurial inunctions begun at once. The artificial leech was applied to the left temple almost daily. Three days after my first visit several small nodules, similar to the one mentioned above, appeared on the iris toward the periphery, touching the cornea, and extending into the recesses of the anterior chamber under the projecting rim of sclera. The eye began to clear slowly, though continuing painful. A week after I first saw him the tension was elevated, and the pain, which was considerable, radiated to the temple and forehead in the manner so characteristic of the pain of increased intra-ocular tension. Paracentesis was done under the usual antiseptic precautions, and was followed by a hemorrhage into the anterior chamber, and the extrusion of a greater amount of plastic material from the angle of the anterior chamber, than one would think could lodge there. The leech was applied after the tapping, and the patient spent a comfortable night. The relief was permanent, pain requiring no further treatment. Three days later the aqueous humor had become clear of blood and lymph, and the pupil could be seen to be blocked with lymph, the adhesions being too firm for the mydriatic to effect. There was noticed at this time a low, smooth swelling in the ciliary region above, involving about one-fourth of the ciliary zone and extending 6 *mm.* back into the sclera, where it faded away. This swelling was under the sclera, and seemed to be the focus of inflammation, the injection passing away everywhere but in its vicinity. A compression bandage was applied, and treatment continued as before. The swelling increased, becoming in a few days quite prominent, and a little larger in both vertical and horizontal diameters. There was no exacerbation of pain or inflammation, or increase of intra-ocular tension. The tension slowly subsided, but not till the end of December did the ciliary region assume its normal contour. At that time I noted the eye almost free from redness, the iris of natural color (blue) and occlusion of the pupil by a delicate plastic membrane, holding the iris firmly all around. Above the cornea, a transparent looking arc, in the sclera, followed the course of the ciliary body where the tumor had been, the usual appearance after absorp-

tion of a ciliary gumma. The tension was a little elevated; light projection and perception good; vision reduced to the perception of moving objects.

The patient left the city in January with the condition of the eye unchanged. He was given a pill of blue mass and sulphat of iron and told to stop the inunctions. I did not consider any attempt at the formation of an artificial pupil justifiable—not so soon, at any rate.

Judging of the condition of affairs in the ciliary body by the probably analagous condition in the iris, there was a circumscribed plastic cyclitis. The masses in the anterior chamber and on the iris were exudations and not gummata, for they shifted their positions much and readily when the aqueous humor was evacuated. Clinically, the appearance was exactly that of a gumma of the ciliary body.

From the character of the eruption the syphilis was of a severe type. When dismissed, the patient's extremities showed, by "boiled ham" colored spots, the extent of the distribution of the syphilide. The papulo-squamous features were gone, each spot being slightly depressed below the level of the skin.

Gumma is put down as a lesion of tertiary syphilis. [1] Noyes describes a form of plastic cyclitis occurring in syphilis which tallies exactly with the features presented by this case, but he does not say in what stage of the disease this form of cyclitis occurs.

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[1] Genito-Urinary Diseases, with Syphilis.—E. L. Keyes.

FUNCTIONAL NERVOUS AFFECTIONS ARISING FROM OPTICAL DEFECTS.*

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THERE is serious doubt in the minds of many pathologists as to whether there exists such a thing as a functional affection, properly so called. It is possible that there would be none such if our power of observation were more complete. There may be subtle changes in the minute structures of organs—changes which are molecular in character and which the microscope is unable to reveal.

For want of a better name there are certain phenomena that are termed "functional" which it is not possible to ascribe to any observable lesion, either in the organ affected or in those connected with it.

In many of these cases a cause can be traced, the removal of which, when possible, effects certain relief. These causes may exist in conditions not considered pathological and may be found in parts of the body remote from the seat of the affection. Such affection may rightly be termed "functional," but the term would rightfully be applied to a very limited number of the cases now considered under this head, were all the facts known.

To be purely functional, an affection must depend upon causes which are known not to be pathological, but how we are to know how many causes there are which may enter into these cases as factors is a problem still unsolved.

The traditional camel's back was broken by the last straw; the source of irritation found in the functional

*Read before the Iowa State Medical Society.

affection may have been this straw, but at the same time be only one of many factors, the sum of which has produced the disturbance.

This view of the matter would seem the more reasonable when we see that the same irritation in another subject produces no like disturbance, even where it is intensified many fold.

In all those cases there must exist two conditions: First, a temperament susceptible to reflex irritation (in other words neuropathic); secondly, a point of irritation of sufficient potency to produce, either alone or in combination with other factors, the effect noted.

Whether this condition of susceptibility may be considered a disease or not must determine the classification of many, perhaps all, of these obscure affections. Whatever name we give to these affections, however, they still retain their importance, and their relief is of as much benefit to the sufferer, whatever view the physician may take of it.

The influence of optical defects upon these cases has for a long time been recognized by the profession, and much has been written upon the subject, so much, in fact, that we can hardly hope to advance much, if anything, that is new. It does no harm, however, to review the subject, and though all that we can say may have been better said before, it will still have its use in stimulating fresh thought upon the subject and attracting the attention of those not formerly interested.

Case I. In the fall of 1886 the writer was consulted by a young man, John Langfitt, 20 years of age. He declared that he had "granular lids" and wanted something for them. He stated that he had had his eyes treated for "granular lids" for four years, his trouble having begun while at Business College in our city. Incidentally, he said that he had curious fainting spells—that he sometimes fell from his horse while on his way to school. He was teaching a country school at the time, but did not refer his trouble in any way to his eyes. He was often attacked with dizziness and headache, and seemed to lose consciousness at times. He had consulted physicians about his

trouble, but had never been relieved. On inquiry his family history was found to be good. His parents were living and well, and he had several brothers and sisters all in good health. His mother, however, and one sister were of markedly neurasthenic disposition. The attacks of which he complained had not been of long duration, but were growing continually worse. He was carefully examined; his kidneys and other organs were found to be in normal condition, and the "granular lids" proved to be a slight conjunctivitis. When the eyes were examined the ophthalmoscope revealed a high degree of refraction error, together with the flannel-red eye ground so often seen in cases of eye strain. Vision was 20/XL in each eye. He was advised to wear glasses and was assured that they would relieve his "granular lids" as well as his headaches. He demurred for considerable time, but gave a reluctant consent when told that nothing else could be done for him.

Under atropin his correction was found to be as follows:

O. D. + 4.00 S. ⊃ × .90C. ax. .90 V. = 20/xx.
O. S. + 5.00 S. ⊃ + .90C. ax. .90 V. = 20/xx.

Patient began wearing the glasses, finding immediate relief from headache. He remained under observation for about five years, and during this time never had a return of any of the symptoms above mentioned.

Case II. Miss M. O., 21 years of age, came for consultation March 5, 1895, by the advice of Dr. J. P. Crawford. Patient was a robust, healthy girl, at the time working in a woollen mill, doing some fine work about looms. Her history was a rather alarming one; she had severe and prolonged headaches, lasting from one day to another and becoming much worse of late. At times she seemed to lose control of herself—did strange things and rambled in her talk. She would recover and have no recollection of what had taken place during the lapse. Her difficulties were most severe when most confined to her work. Her family history was bad. A brother had died insane and her father had been "queer." The girl's mother was much alarmed and expressed her fears that the daughter was going insane. Some time before consultation, having considerable pain about the eyes as well as failing vision, she went to a drug store and was fitted with glasses which she said gave relief for a time.

This became a matter of surprise subsequently when her refraction was ascertained. Vision in both eyes was 20/L, the same with her glasses, which were — 1.25 S. Correction under atropin was found to be as follows:

O. D. + 2.50 S. ⊃ + 1.75 C. ax. 75°, V. 20/xxx

O. S. + 2.50 S. ⊃ + 1.75 C. ax. 105°, V. 20/xxx

which would read, when her other correction was taken into consideration,

O. D. + 3.75 S. ⊃ + 1.75 C. ax. 75°.

O. S. + 3.75 S. ⊃ + 1.75 C. ax. 105°.

No other treatment was advised but the wearing of the glasses. The patient has been seen several times since and there has been no return of the nervous or other troubles, though she has gone back to the mill and has continued her duties there since the fitting of the glasses.

Case III. Miss C. O., 19 years of age, complained of headaches and peculiar nervous symptoms, the most prominent of which were sundry jerking and jumping movements of the limbs and muscles. During examination patient's limbs were thrown about, not violently, but much like the movements of a restless person who had become tired of sitting and wished to change position. The mother said she was very much worse at times and had been afflicted with "St. Vitus' Dance" since she was a child. Her vision was 20/xxx in each eye, which, under the atropin, was raised to 20/xx in each eye with a + .50 cyl. ax 180°.

These glasses were prescribed and patient went home to a small town thirty miles distant. She returned in about a year to have her glasses repaired, stating that she had no more headaches and that the nervous symptoms had entirely disappeared.

Case IV. R. D., a young woman 21 years of age, seamstress by occupation. She gave a history of peculiar fainting fits for many years back. Walking on the street at times she would be taken with a "numbing coldness" creeping from the extremities and producing "paralysis" so that she could not walk and would have to be carried, or would have to continue on her way with much difficulty. Of late the attacks had become much worse,

some family trouble and continued work seeming to aggravate her trouble. She finally consented to have her eyes examined, as she had considerable headache, with the other nervous symptoms. She had just recovered from an attack in which she lost consciousness and there were convulsions preceding the unconsciousness, though not of a very severe character. The ophthalmoscope showed considerable congestion of retinæ and nerves, but both fundi were in other respects perfectly normal in appearance. Vision in both eyes 20/LX. Corrected under atropin.

O. D. + 75 S. ⊃ + .50 C. ax. 90° V. = 20/xx.

O. S. + 75 S. ⊃ + .50 C. ax. 90° V. = 20/xx.

V. with both eyes 20/xv. She was advised to wear her glasses continually and to work as little by artificial light as possible. She was not much improved at first, but after the lapse of a month she had no more headache, and the faintness, convulsions, numbness and other symptoms of a nervous character entirely ceased.

These four cases have been selected because they seemed to illustrate the relation between the defective vision and consequent eye strain and certain functional nervous disorders.

Throughout the whole subject of physiology there is no part so interesting or so important as the subject of reflexes. The central nervous system, so closely connected with every organ in the body, only awaits a certain amount of stimulation along some afferent nerve in order to act along efferent paths, either mildly or with the force of an explosion. Just as a Leyden jar may give a shock sufficient to knock down a strong man, or carefully discharged, may produce only a stimulating effect.

In the normal state we see the natural and vital function of the body carried on reflexly. In what we may call a semi-normal state we see peripheric irritation heaped up within the central nervous organ and resulting in an explosive sneeze or cough. In pathological conditions we see the results of irritation acting reflexly and resulting either in an explosion, as in an epileptic fit of mild or severe form, or in the slower and more constant form of headaches, dyspepsia, migraine, etc.

In the first instance the afferent stimulation is well known; in the last it is the duty of the physician to search it out and eliminate it—a duty very beautiful and easy in theory, but another matter in practice.

Beyond a doubt the most delicate organ of the body is the eye. There is no organ of the body that contains nerves of so sensitive a character, or more closely connected with the central nervous system. At the same time we know there is no organ that is more subject to strain than a defective eye, especially if it is hyperopic in refraction.

The other organs of the special senses are passive and little subject to strain; likewise is the normal eye passive when looking at objects at or beyond twenty feet, but the hyperopic and astigmatic eye is never at rest. It must be in a state of constant tension of a varying degree in order to obtain clear vision, and the result must be strain and irritation of a very aggravating character, just such as are required to set up reflex disturbances.

With these facts before us it would appear but reasonable to look to the eye first in all cases where we have reason to suspect nervous trouble to be functional.

In the cases given, whatever the diagnosis, the relief was certain. In case I we find rather an unusual amount of defect to have been so long unobserved or unsuspected. The fainting fits were so much like epilepsy of the minor variety that his parents had reasons to fear he would become epileptic, and is it not possible he would have become such had the remedy not been found?

In this case there was more strain upon the eyes for distance than there would be upon the emmetropic eye for reading or any close work. For close work more than half as much more effort than would be required by the ordinary eye.

How many horses are there, that, given an ordinary load, would be able to have it doubled and not break down? In cases where the patient has no neuropathic disposition, or whose use of the eyes is chiefly for distance, no trouble

arises from these defects more than an occasional headache from unwonted close work, or failing vision when presbyopia comes on, as it always does in these cases at an early age.

In case II we have a considerable hyperopic astigmatism, increased by wearing concave lenses, and a consequent strain so great that the patient was breaking down mentally as well as physically. It seems curious that the concave glasses should appear to the patient to give relief when the symptoms of strain were increased by them at the start. It shows, however, how much mental impression will influence a patient, even against his own sensations, and makes the success of Christian science, magnetic healing and other fads of like kind little to be wondered at.

There can be but little doubt that Miss O. would have been acutely insane in a short time had not this strain been removed. Her family history and symptoms at the time certainly seemed to warrant it.

Cases III and IV show much less optical defect, but in these cases the neuropathic condition was evidently in inverse proportion. It is certain the choreic symptoms in the one and the hystero-epileptic in the other disappeared under correction of the optical defects. How many other factors may have entered into the exciting cause cannot be known, but the removal of the one restored the equilibrium, and with returning health the other factors will be doubtless eliminated so that even a correction of the refraction may not be necessary to health in the future. Had it been possible to eliminate any of the other causes, if there were any, the results would have been the same if the amount of irritation removed were sufficient to restore equilibrium.

These cases are not given because they are considered unique or uncommon. Every oculist has in his records hundreds of cases illustrating the influence of eye strain upon these neuropathic patients.

At present too little attention is paid to the eye and its possible connection with these functional affections. All functional nervous troubles, of course, can not be referred to eye strain. In fact, only a very small per cent is due

solely to this cause, yet it may have its influence in a large number of cases.

Ranney in his work on Nervous Diseases gives sixteen cases of epilepsy, only two of which are emmetropic. Eight of these were hyperopic and all but one had heterophoria of a greater or less degree. Much the same condition would be found in other functional nervous troubles, without doubt, and a correction of these anomalies would be of vast importance in the therapeutics of these cases. Since their presence is so constant and their correction so easy, it would seem only reasonable that any eye strain be first eliminated among the first therapeutic measures adopted. The results of such treatment will not leave the physician long in doubt of its utility.

A CASE EXHIBITING BILATERAL PALSY OF THE SUPERIOR RECTUS MUSCLE, THE IRIS AND CILIARY MUSCLE WITH LOSS OF POWER CONVERGENCE.*—Illustrated.

By Frank H. Edsall, M. D.,

OPHTHALMOLOGIST TO ST. FRANCIS HOSPITAL, PITTSBURG,

—AND—

Theodore Diller, M. D.,

PHYSICIAN TO THE NEUROLOGICAL DEPARTMENT OF THE PITTSBURG FREE DISPENSARY.

H. T., 52 years of age, blacksmith; denies syphilis. He was in robust health, and working regularly at the time he met the accident about to be described, and to which he attributes all the symptoms from which he now suffers.

Four years ago he fell into a pit eight feet deep, sustaining a fracture of a rib and a number of bruises. He was not rendered unconscious by the fall, but states that he was very much "shaken up" by it, and was in a dazed condition for some time afterwards. The next day after the accident he made an effort to work, but found he was too stiff and sore to do so, and gave up the attempt. He states that he has from that day to this suffered from the symptoms from which he now complains, except that the pain from the broken rib and bruises soon disappeared.

Present Condition.—Short, stout, thick-set man. Walks with feet wide apart, taking short steps, carrying head thrown well

*Read before the Pittsburg Academy of Medicine, October, 1895.

back. The sclera are seen between the upper lids and superior margins of the cornea. His speech is slow, measured, sometimes halting. (This symptom, too, appeared since the accident.) He complains of pains in the occipital region, and along the entire spine. Muscular strength and power of endurance are greatly diminished. His finger movements are clumsy, so that he finds it very difficult to button or unbutton his coat. The knee jerks are normal. No disorder of sensation. There are several points along the spine pressure over which causes much pain.

Examination of the eyes of patient gave the following results: Vision in right eye 20/xxx. In the left eye the vision was reduced to mere light perception. There is complete paralysis of the superior recti muscles of both eyes, although the pupil of the left eye is not quite so much displaced downward from the horizontal plane as is that of the right eye. The internal recti muscles show, also, a partial palsy, the oblique muscles, seemingly, doing most of the work in converging. The oblique muscles and the external recti muscles do not give evidence of being in any way affected. There is a marked staphyloma of the sclera in the superior nasal quadrant of left eye, arising, apparently, from compression due to irregular muscular action upon the globe. The irides show very little response to stimuli of any kind, the pupils being very decidedly contracted and showing little tendency to relax except under a mydriatic.

The fundus of right eye exhibits no marked abnormality. There is a myopia of about 1.00 D., accompanied by a myopic crescent, of moderate size, at temporal margin of disc; and the disc is, also, slightly paler than normal at the temporal border. In the left eye the disc is very oval in form, greenish in color, indistinct in outline, with some of the vessels entirely atrophied and the caliber of the remaining ones very much diminished.

There is also a staphyloma of considerable size at the temporal side of disc.

The most interesting feature of the case is the unusual character of the muscular palsies, the only feasible explanation of which is that given elsewhere in this paper, and which gives rise to some interesting speculations in regard to the location of and connection between certain centers connected with the functions of the eye.

The case is one of unusual interest to both the neurologist and ophthalmologist. The general smptoms presented are those so commonly seen after accidents where the victim has received a general "shaking up," and which have been called "railroad spine," "traumatic neurosis," "traumatic neurasthenia," etc.

From the facts that the eye palsy is bilateral, and affects only certain muscles supplied by the third nerve, it must be concluded that the cause of the palsy is not in the third nerves themselves, but in their nuclei; or else, possibly, as suggested by Gowers,[1] in a higher center. This being admitted, the ocular symptoms offer the strongest sort of evidence in favor of the genuineness of the symptoms which go to make up his traumatic neurosis. Moreover, assuming (what must be the case) that the nuclear disease is more than *functional*—that definite morbid changes have taken place—would it be too much to assume that the manifestations going to make up the symptom—complex, traumatic neurosis, were also dependent upon organic changes in nerve centers?

But it is not our purpose at this time to follow out this interesting train of inquiry, as one of us expects, elsewhere, to dwell upon this phase of the case at some length. It should, however, be added that the case has never been in litigation, nor are such steps contemplated. Now as to the eye symptoms which more immediately concern us in this paper.

The patient's statement that the eye symptoms, which are now present, arose the day after the accident, and have continued without change up to the present time, must be taken with some caution; yet it must be admitted that some ocular trouble (palsy) dates back to this day after the accident. The symptoms may have been, at times, more pronounced than they are now; but it is quite probable, from the patient's statement, that he carried his head back from the beginning of his trouble; that palsy of the superior recti muscles did begin, as he states, the day after the accident.

[1] Diseases of the Nervous System. Vol. 2, p. 185.

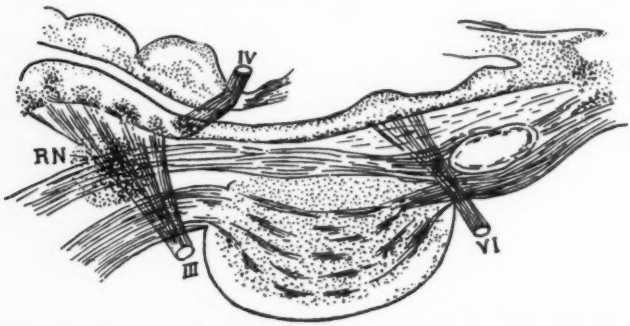
What change occurred in the nucleus which caused these ocular symptoms? One naturally answers, vascular damage or inflammation. Gowers[2] makes three classes of nuclear palsies according to the probable nature of the morbid process.

1. *Chronic*, due usually to degenerative processes.

2. *Acute*, suggestive of inflammation, (the polio-encephalitis of Wernicke), coming on in a few days or weeks.

3. *Sudden*, occurring within a few minutes, or at most an hour or two, always indicating a vascular lesion.

Gowers lays stress on the distinction between *acute* and *sudden*. Further, he states that "The vascular lesion



Sagittal section through the cerebral axis, to show the nuclei of the ocular nerves in the floor of the aqueduct of Sylvius and the fourth ventricle, and the course of the nerves to their exit, the various groups of cells from which the third nerve may be seen. R. N. red nucleus of the tegmentum; L., lemniscus (sensory tract); CC, motor tract in the crus cerebri seen to traverse the pons and enter the anterior pyramid of the medulla. (Starr.)

which causes sudden palsy, the onset of which is survived, is usually obstruction of the arterial branches which the basilar gives to this part. The obstruction is usually bilateral. Hence small foci of softening are often found in each third nerve nucleus." This explanation perhaps fits our case better than the inflammatory theory, because of the suddenness of the palsy. Besides the symptoms are best explained on the supposition of a bilateral lesion.

[2] Op. cit. p. 197.

The exact position of the lesions is a matter of interest. The nucleus of the third nerve, as seen in the accompanying diagram, is really a series of nuclei occupying a considerable area in the floor of the aqueduct of Silvius, (10 *mm.* in length according to de Schweinitz,)[3] situated just below and in front of the anterior corpora quadrigemina and extending downwards and backwards, almost to the much smaller nucleus of the fourth nerve. The arrangement of the nuclei according to Hansen and Voelckers,[4] as modified by Kahler and Pick[5], is as follows[6]:

"The most anterior portion of the nuclei is related to accommodation, the next to the reflex action of the iris, while the remainder of the nucleus, comprising its chief part, subserves the external muscles in the following order, from before backwards: Internal rectus, superior rectus, levator palbebra superioris, inferior rectus, inferior oblique. But the contiguity is lateral as well as anteroposterior, and the disposition is thus complex." The annexed scheme is the modification suggested by Kahler and Pick.

Mid-line.

Ciliary muscle.

Sphincter iridis.

Levator palp.

Rect. Int. Rect. Sup.

Rect. Infer. Oblique. Inf.

(Obliq. Sup., 4th n.)

Upon this scheme, our case cannot be satisfactorily explained. Conjugate palsy of the upward movement of the

[3] Nervous Diseases by American authors, (Dercum) p. 773.
[4] *Arch. f. Ophthal.*, Bd. XXIV, 1878 p. 1.
[5] *Prag. Zeitsch. f. Heilk.*, 1881, p. 301.
[6] Gower's op. cit.

eyes, in association with paralysis of the levators, has been observed a number of times, and is due, according to Kahler and Pick, to lesions in the posterior part of the third nerve nuclei. In a case reported by Gowers[7] in which (like our case) the much rarer palsy of the upward movement alone, without involvement of the levators, existed, "A very small tumor was found in the middle line behind the posterior quadrigeminal bodies, damaging slightly these, the velum and the adjacent part of the inferior vermiform process of the cerebellum." This leads Gowers to state that a lesion in the gray matter of the corpora quadrigemina may produce a palsy of the upward conjugate movement of the eyes. But in our case there is palsy of the ciliary muscle, and of the iris; and the anterior portion of the third nerve nucleus presides over these muscles. Moreover, although each internal rectus muscle is active in lateral conjugate movements, the power of convergence is lost. There can be no doubt that there is a separate center for convergence. The power of accommodation, too, is lost; and it is reasonable to assume, as does de Schweinitz, that these two nuclei, normally associated and usually affected together, are situated in close proximity. If this be so, and the main features of the scheme of Pick and Kahler be accepted, then the center of convergence must be situated in the anterior part of the third nerve nucleus. But as the superior recti are paralyzed in our patient, and not the levators, it is reasonable to suppose that the center for the superior rectus is anterior to that of the levator. Because these movements, localized in the anterior portion of the third nerve nucleus, are affected along with, and only with, the superior rectus palsy, we do not believe that the lesion is, as suggested by Gowers, in the corpora quadrigemina, but in the anterior portion of the third nerve nucleus.

To better explain, then, the penomena exhibited in our case, we would suggest the following modification of the scheme of Kahler and Pick.

[7] Op. cit. pp. 185-6.

Mid-line.

Ciliary muscle.

Center for convergence.

Sphincter iridis

Rect. Sup.

Lev. palp. Rect. int.

Rect. Infer. Obliq. Inf.

(Obliq. Sup. 4th n.)

The evidence offered by our case permits us to suggest the arrangement in the anterior portion of the nucleus as far back as the center for the superior rectus muscle. It gives no hint as to the exact arrangement of the nuclei behind it.

A NEW METHOD OF TREATING PTERYGIUM.*

By Anton Coe, M. D.,
of Washington, D. C.

I offer no apology in calling the attention of the members of this society to a new method of treating pterygium, especially, first, since the patient can be treated while sitting erect in a chair; second, since there is no interruption to his business or the free use of his eye, and third, because all signs of the growth soon vanishes to return no more. Having disliked all prescribed methods for treating this disease, I have often thought that there must be a better and simpler way, and after a careful reading of the literature upon this subject, I am satisfied that the whole trouble lies alone in the apex and that the vascular supply is not a part of the disease, but only an effect, as it but answers the call of the apex for blood, and thus reasoned, that if the apex could be destroyed the vascular supply would cease, from disuse. The correctness of my reasoning will be seen by the following cases:

Case I. Mr. E. H., white, 64 years of age, came to my office with a *pterygium crassum* on temporal side of left eye, and a *pterygium tenue* on temporal side of right eye. They had been treated for some time by the usual methods with no good effect. Operation was advised, but as he was a very busy man he could not spare the time. I told him I could operate in a way that would not interfere with his occupation and so proceeded. The eye being placed under the influence of a 2 per cent. solution of cocain, applied to the apex only, I heated to redness a platinum probe and

applied it to the lower half of apex, leaving the upper and deeper portions for the third and fifth days. On seeing the eye again on the third day I was surprised and delighted to find that the vessels feeding the lower portion first cauterized were disappearing, and they so progressed until six days after, when there was scarcely a trace of the former trouble.

Case II. Mr. B. A., white, 42 years of age, appeared with *pterygium tenue* on the right eye, nasal side. Said "he only wanted me to make his eye more presentable, as he was going in a few days to attend the Masonic Conclave at Boston and would return for operation when he got back." I said I could operate at once and he could go with a better eye, and if he needed any further treatment he could call upon his return. As he did not return to my office and five months had elapsed, I called on him to see the result of the operation, and was again surprised as in case No. 1, to see no trace of the *pterygium* and he said "it cleared up at once," and thus the reason for his not calling on his return. As I had not touched the vessels in either case, but simply removed the cause by cauterizing the apex, does it not clearly show that the disease lay wholly in the apex, and that we are guilty of an error of judgment when we remove the vascular supply as a part of the disease?

The probe used in these cases is not unlike the one devised by Gruening, except that it is longer. I have bent the blade, near its point, to an angle of 45°, so as to cauterize the apex only. The same instrument is used for cauterizing ulcers of the cornea. I believe we have in this operation an ideal one, and trust that it may yield the same good results in your hands that it has in mine.

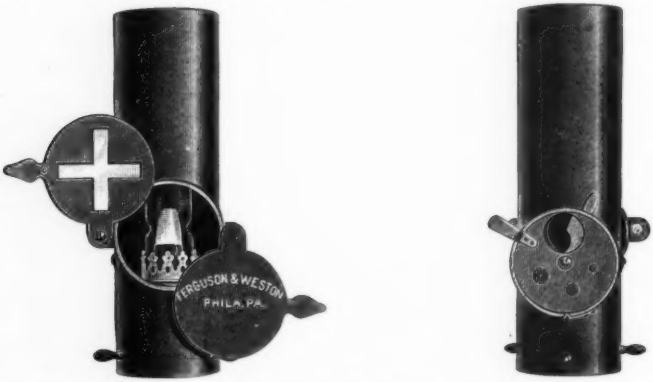
1110 F street, N. W., Washington, D. C.

*Read before the Ophthalmological and Otological Society of the City of Washington.

AN ADJUSTABLE LAMP OR LIGHT-SCREEN, ESPECIALLY ADAPTED TO THE SHADOW TEST.*—Illustrated.

By Mason W. Zimmerman, M. D.,
of Philadelphia.

TO obtain the best results in examination of the eye by artificial light, it is essential that the size and shape of the light-source shall be easily adjustable and general illumination of the room reduced to the minimum. This is peculiarly true of the modern and more exact methods



of applying the shadow-test, in which accuracy depends very largely upon reduction in the area of both light and mirror surface.

The illustrations show a device which has in my hands,

*Shown at the meeting of the ophthalmological section of the Philadelphia College of Physicians, February 18, 1896.

after very careful experiment, seemed to meet all the indications outlined above. The apparatus is made entirely of blackened brass, and accurately adapted to the standard Argand gas-burner. The "Welsbach" burner, now being extensively used, requires slight changes in the manner of supporting the chimney.

The main vertical barrel of the screen completely covers the glass chimney, and is furnished on the inside with springs which clasp the latter gently, hold it in position, and prevent unpleasant noise when it is moved. The lateral openings are arranged to present opposite the point of greatest illuminating power under the conditions which exist during the day. In all large cities at least, the gas pressure is lower in the evening, and the point of election in the flame appreciably nearer its base.

On one side, four circular openings, respectively, 5, 7½, 10 and 25 *millimeters* in diameter, have been arranged in a revolving disc which is accurately halted at the desired point by a spring clip. These fulfill all possible requirements of skiascopy, while the largest is quite sufficient for most ophthalmoscopic work. Behind this disc is an independent shutter (shown partly closed in the cut), by means of which the light can be entirely cut off.

Directly opposite the above openings is one which exposes practically the entire flame, while its projecting border prevents needless radiation of light. Two shutters are hinged to fit over this opening, one being a blank to prevent the escape of light when using the opposite side, while the other is fenestrated and backed by a sheet of thin porcelain glass. The latter plan secures a clear white illuminated image corresponding to the opening in the metal, and one which, owing to the absence of marked diffusion at its margin, forms a most satisfactory object for distant muscle testing. For this purpose I have adopted the simple Greek cross as suggested by Dr. Ziegler,[1] but smaller, and find it satisfactory. The diameter of the arms is 10 *millimeters*

[1] See paper on "Greek Cross Test Object," read at meeting of the Pan American Medical Congress, Washington, 1893.

and the total diameter of the cross 50 *millimeters*. The form of this opening can, of course, readily be changed to suit the user.

Heating of the metal can in a measure be prevented by lining the body of the shield with dark Asbestos felt, or its unpleasant effects modified by using the same material as a jacket. I have not, however, found this necessary, as the insertion of three small non-conducting handles at equal distances apart and near the base, make rotation very easy, and other changes can be made without serious discomfort.

1633 Chestnut street.

A CASE OF PIGMENTATION OF THE CORNEA.

By Casey A. Wood, M. D.,
of Chicago.

THIS peculiar and rather rare condition is well illustrated by the following case:

Mr. D., 56 years of age, came to me November 29th, 1895, and from him I obtained this history: He has always been near-sighted, and at school his eyes were weak and he was unable to study with any satisfaction. Has always had more or less vertigo and frontal headache but until recently never noticed any redness of the eyes or morning adherence of the lids. Two months ago he began to have supra-orbital pain on the left side extending to the top of his head. This hemicrania was very severe and for seven weeks it continued, with some remissions, until about a week ago, since when it has been continuous. For most of this time he was not able to sleep and then only when under the influence of narcotics. He never had any pain in the right eye or right side of the head.

After the second attack of pain he noticed that his eye was quite red and that the vision was not as good after the pain had somewhat subsided. It was much diminished after the last attack, just before I saw him.

S. t. Pr. Vision of the left eye = finger counting at 4 feet; right, $\frac{15}{200}$; with his reading glasses he reads Jaeger 4, but cannot distinguish even the coarsest print with the left eye. The local signs and symptoms, as regards the left eye are these: T+2, shallow anterior chamber, motionless and semi-dilated pupil, several small posterior synechiæ; hazy, infiltrated cornea and doubtful cloudiness of the lens. The cloudy cornea, upon an examination with a strong Zeiss lens, focal illumination, win-

dow reflex and the employment of fluorescin and pyoktanin solutions, was found to consist, first, of a diffuse interstitial infiltration about the center of the cornea, and of a punctate keratitis, with the dots arranged in the usual pyramidal fashion. The base, 6 or 7 *mm.* broad, is intersected by fine vessels, and the apex, where the spots are few and scattered, reaches almost to the middle of the pupil. No vessel advances into the cornea more than 2 *mm.* from the limbus, and some of them appear to end in the dots, forming a picture like that of nerve filaments and the tactile corpuscles. Both the ciliary and the scleral vessels are much engorged. The eye-ball is tender. The condition of the fundus cannot be made out.

With the exception of a marked refractive error the right eye appeared normal. I at once applied a 1 per cent mixture of eserin to the left eye and gave a $\frac{1}{2}$ per cent solution with cocain for use at home until he could decide about the operation which I suggested. On December 2nd I performed a peripheral iridectomy upwards. Bleeding occurred from the iridic vessels and the anterior chamber filled with blood. Two days subsequently the tension was considerably less (the wound having not yet closed), the pain had gone and the patient was able to sleep without taking analgesics. The signs and symptoms of glaucoma now steadily disappeared, the a. c. soon cleared up, until on the 14th of January, V. L. $= \frac{15}{200}$, and I was able to determine the refraction of both eyes as follows: $110° + 3. + 6 = \frac{2}{10}$ $180° + 3. + 6. = \frac{2}{30}$. With +2 added patient reads J. 1, R. and J. 6, L. and the cornea is less hazy. The eye is very quiet and the man is able to do some work. The F. of V. for white, left, is, however, greatly reduced, and comprises an area bounded by the 20th parallel. There is an opacity in the upper fourth of the crystalline which looks as if, in tearing away the iris from the lens, the anterior capsule had been injured. The ophthalmoscope, although the media are still hazy, shows a marked excavation of the disk.

February 3, 1896. The left lens is now quite opaque, but the eye is absolutely quiet; T + ? or Tn; there has been no trouble with the eye since last report. There is a rent in the capsule, corresponding in position with the cut edge of the iris, the edges of which are everted and faintly pigmented.

January 21, 1896. In the cornea, a little to nasal side of pupillary center is a large isolated 1 *mm.* broad, rounded mass

of pigment, and towards the outer edge of the pupil a smaller one, also discrete. At the edge of the pupil, when at its average size, are minute scattered deposits, some of them arranged in chains but most of them irregularly dotting the cornea. Then, directly downward, is a perfectly clear band of corneal tissue about 2 *mm.* wide, entirely free of pigment. As we proceed still farther downwards from the pupil towards the limbus the fine dots once more show themselves until just before the sclero-corneal junction is reached the peculiar picture is presented of what seems to be round corneal dots undergoing a process of pigmen-

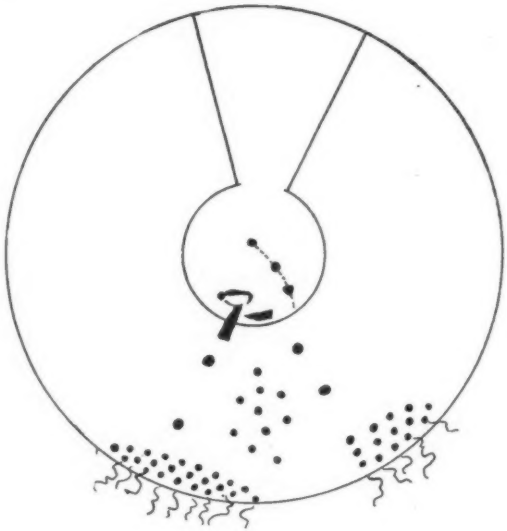


FIG. I.

tation. We then reach an area of hazy cornea, 6 *mm.* long by 3 wide, bounded below the sclera. This contains a large number of capillaries, plainly seen to be extensions from the anterior scleral vessels, running past or into a regular row of medium-sized dots, about 30 in number, that are placed almost equidistant from the limbus cornea and from one another. Some of these, especially at the center, are jet black, some grayish, and some are whitish—in all stages of pigmentation.

March 6, 1896. A portion of the diffuse interpunctate haziness, just referred to has disappeared, so that entirely trans-

parent cornea is seen, in which the black dots, chains and irregular figures are planted.

The best description and discussion of pigmentation of the cornea known to me will be found in an article by Weeks in the first number of the New York Eye and Ear Infirmary Reports. He there reports the case of a patient, 32 years of age, who gave the following history: "About twenty years ago the point of a needle entered the cornea of the right eye and injured the lens and possibly the iris. Considerable inflammatory reaction followed; subsequently two operations were resorted to which the patient thought were for the removal of remnants of lens substance. But little vision remained in the eye, and this gradually disappeared. The eye remained quiet until about two weeks before the patient presented himself, when it became red and very painful, the pain extending to the corresponding side of the head. This had continued with slight remissions until the present time."

There was a uniform zone of clear cornea 1 *mm.* wide running entirely around the limbus. Inside of this the cornea is opaque, the opacity being of a rusty brown or tan color, so that Weeks was unable to say whether he was dealing with a sclerosed, amber-tinted lens, dislocated into the anterior chamber, or a pigmented cornea. After an attempt to relieve the symptoms by iridectomy, enucleation was performed and the eye hardened in Müller's fluid. The a. c. was found to be filled with an altered blood clot. The following is the report of the subsequent examination:

"On opening the eye the anterior chamber is found to be occupied by what appears to be a blood clot. The iris occupies its normal place except at one point where it is bulged forward by the pressure of a mass of lens substance from behind. The capsule of the lens is partly collapsed and retains fragments of lens substance. Posterior to the capsule of the lens is a cyclitic membrane to which the anterior portion of the detached retina is firmly adherent. From this membrane the retina extends backward in the form of a narrow cylinder to the optic nerve.

The choroid remains attached to the sclerotic. The space between the choroid and the detached retina is filled with a flocculent grayish exudation. The optic nerve is normal in size.

"*Microscopical Examination.*—The chief interest centers in the cornea, which is of normal thickness. The opacity mentioned above was thought to be due to a deposition of blood pigment on the posterior surface of the cornea; however, such was not the case. The epithelial layer shows some granules at its base, the pigmented fluid having apparently passed through the canals for the passage of nerve fibers. Bowman's membrane is normal. The substantia propria throughout the portion corresponding to the opacity is the site of the deposition of numerous pigment granules, evidently composed of the hematin of the blood. These granules are found to be most abundant in the lymph spaces between the lamellæ, but are also present between the connective-tissue bundles and individual fibers. In shape the granules are irregularly cuboidal, having a diameter of 1.5 *mm.* Distributed throughout the substantia propria, they are largest and most numerous just beneath Bowman's membrane. Descemet's membrane presents the usual hyaline appearance; the endothelium is not disturbed. The corneal zone, that appears to be clear, microscopically, is free from pigment, except in a few lymph channels extending from Fontana's spaces. These are crowded with the pigment granules and appear to be the paths through which the pigment, in a liquid form, has traveled from the sinus of the anterior chamber into the substantia propria of the cornea. The line of demarcation between clear and pigmented corneal tissue is very sharply cut. When looked at with a Hartnack $\frac{1}{7}$ objective, one-half of the field will be occupied with a clear cornea, the other half being pigmented. The fibers of the cornea do not appear to be degenerated. The newly formed connective tissue elements which fill the wound made at the time of the operation are pigmented.

"Sclerotic normal and free from pigment. The anterior chamber is filled with an inflammatory membrane composed of connective tissue and blood vessels, free blood corpuscles, and masses of pigment—granules. In the iris angle and in Fontana's spaces the masses of pigment are very plentiful."

The writer believes that the pigment entered the corneal substance in the form of soluble hemoglobin and was then transformed into a salt not soluble in the corneal lymph.

Treacher Collins reports a very similar case, in which, also, the appearances were exactly those of a dislocated lens. The patient had received a blow in the eye four months before this observer saw her. Vision was nil and T + 1. A microscopical examination showed the presence of pigmentary granules between the corneal fibrillæ and, as in Weeks' case, these were not confined to the spaces of Fontana.

The writer also reports, in the same paper, the case of a patient, 40 years of age, who, four years previously, had received a blow on the head followed by defective vision. Four months before seeing her she had had double iritis. There was a corneal ulcer and a dark clot in the anterior chamber of the right eye. The right cornea showed a rusty brown patch at its center, changing to deep red at the periphery. A hazy, colorless corneal zone extended about the sclero-corneal junction. In this case tension was normal and there was no blood clot in the anterior chamber.

Vossius reports two cases, an abstract of which I quote from Weeks:

"*Case I.* Female, 5 years of age. Three months previously patient received an injury to the left eye which soon produced complete blindness. When seen the cornea presented a central opaque disc of a smoky, brownish-red color, with a narrow, clear zone at the periphery. Very slight trace of previous injury. At the end of three weeks the central patch became more sharply defined and took on a greenish hue, resembling a lens dislocated into the anterior chamber. The tension was plus throughout, V. = 0. Pain constant. After enucleation the eye was hardened and examined. The narrow zone at the periphery was not of normal transparency, but was traversed by brownish lines near Descemet's membrane. Blood coagulum in the anterior chamber. Lens in position. The substantia propria of the cornea in the pigmented area was filled with small granules which were of a pale yellow color, reflected the light strongly, and stained readily with eosin. The granules filled the lymph spaces and were also found within the lamellæ. Some of the large lymph spaces and lacunæ near Descemet's membrane at the

periphery were filled with the granules. Sections treated with a solution of ammonium sulphate gave a greenish color, indicating the presence of iron.

"*Case II.* Male, 13 years of age. Was wounded in the eye with a fork in December, 1886. November 22, 1887, the right eye has been painful and inflamed during the summer. *St. Pr.* Some peri-corneal infection. Cornea transparent only in a narrow peripheral zone. Central circular patch, dusky reddish-brown. Tn; V. = 0. Small scar, size of a pin's head, near the sclero-corneal junction. Enucleation performed November 23, 1887. Deposits in the pigmented portion resembling those described above were found. *Small blood vessels filled with blood corpuscles were found passing from the limbus into the parenchyma of the cornea.* The granules occurred in the lymph canals and between the fibrillæ. They were also found at the base of the epithelium of the surface of the cornea, having apparently followed the canals for the passage of nerve filaments. Sections placed in a concentrated solution of cyanid of potash took on a dark color, indicating the presence of iron."

Vossius considers the granules found in the lymph spaces and between the fibrillæ to be masses of hemosiderin, following the authority of Neumann. He also believes that they are the result of bleeding into the *substantia propria*, but both Weeks and Collins deny this.

Caspar also has an article upon the subject.

Although corneal pigmentation is an exceedingly rare process there seems no reason why it should not occur. Although the cornea has no blood vessels, and although in all the cases of pigmentation so far recorded (excepting the case of Vossius) vascular new growths in the parenchyma were not found, we must remember that such a state of affairs has taken place elsewhere, as in the pigmentation of non-vascular osseous tissue. We also know that migratory white corpuscles may act as carriers of hematin many millimeters from the vessel which normally held them. Moreover, especially when intraocular tension is marked and an acute inflammatory process is going on, the diapedesis of red corpuscles into and about the corneal lymph channels is probably easy, both from a blood collection in

the anterior chamber and from the external vascular loops at the limbus corneæ.

So far as my own case is concerned it would appear as if we have mainly to deal with a pigmentation of the dotted deposits on the membrane of Descemet commonly seen in the so-called serous iritis.

Finally, we notice in the majority of the cases recorded: 1. that they were mostly examples of some form of glaucoma, with increased and persistent intra-ocular tension; 2. there was bleeding into the anterior chamber; 3. there was brownish, smoky or other discoloration of the central area of the cornea, and 4. pigmentation was found at the limbus corneæ and in other parts of the anterior segment of the eyeball.

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DIRECT MASSAGE AS AN AID IN THE TREATMENT OF CERTAIN HYPERPLASIÆ OF THE ANTERIOR OCULAR SEGMENT.—Illustrated.

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In a "note upon the value of direct massage of the cornea as an agent in the treatment of corneal opacities," read before the State Medical Society of Minnesota in June, 1894, and subsequently appearing in the Philadelphia *Medical News*, I gave the result of my experience in the treating of corneal opacities by direct massage with a spoon devised by myself for this purpose, and spoke incidentally of the possibility of its value in the treatment of certain other neoplasms. In this paper I said:

"The large number of remedies that have been proposed to clear the cornea of scars or superficial infiltrations, are but discouraging proof that we have not as yet any one method of treatment that is eminently satisfactory. It may be observed, from their widely different local action, that the pathology of these formations has not been carefully kept in view by the advocates of many of these proposed remedies.

"There is no great number of consecutive cases, in which vision is impaired by an opacity, that will yield to the same treatment so far as a drug is concerned. The different conditions present demand different means of therapeusis; in the one case a slightly irritating remedy, in the other a decided irritant.

It is not that I would advocate any new drug, but a method that facilitates the action of medicines in many cases, and even more, will, in itself, I believe, do much towards the diffusion, or entire dispersion, of the obstruction to vision. The cure of peripheral opacities is usually demanded for cosmetic reasons alone, but in the case of a scar in the pupillary area, it becomes more than a mere disfigurement, as it may greatly interfere with vision.

"After any corneal ulceration a certain amount of the cellular infiltration present clears up, and in cases in which there has been little more than a loss of epithelium, an almost imperceptible scar remains. This is particularly true in the case of children. In such cases very little of the true corneal tissue has been involved, the epithelium suffering most. There is a class of cases, however, in which the ulceration has left a more or less decided loss of the cornea, which is partially or completely filled up with cicatricial tissue. In many cases treatment gives but unsatisfactory results. In a few of such patients, I have, by a process of massage which I shall describe, been enabled to aid materially in rendering the cicatrix less dense. Of this I am sure, and the diminished density will of course result in much less diffusion of light and in an improvement of vision that has been noticeable in some of the cases."

In the two years which have elapsed since the reading of this paper, making three and a half years in which I have tried the method, I have felt a gradually increasing confidence in its utility, not alone in the treatment of corneal opacities, but as well, as an adjuvant in the treatment of certain obstinate scleral and corneo-scleral affections. It has been of noticeable value in hastening the resorption of episcleral nodules, and in that intractable disease sclero-keratitis (migratory scleritis, sclerosing keratitis). This latter affection, fortunately rare, is unfortunately obstinate in yielding to the usual therapeutic methods. I have come in contact with only three cases of true sclero-keratitis in the past two years, for one must not confound the affection with a typical case of interstitial keratitis. Direct corneal and circum-corneal massage in these cases, with cocain ointment (gr. V to ℥i) was attended with much improvement. There was noticeable resorption of the corneal infiltration and reduction in the scleral engorgement; brought about, I believe, by the stimulation of the lymphatic channels, and the improved

tonicity of the vascular apparatus, of the entire anterior ocular segment, as well as by the very thorough method of directly applying the medicament. As I have said in my first paper, we cannot hope to entirely clear up a dense cicatricial mass as the result of a deep ulceration of the corneal stroma, but we may look for improvement in opacities in general in two ways: First, we know that surrounding this dense central mass there is, very often, an area of less dense opacity, due to cellular infiltration, and imperfectly organized corneal tissue. I have noticed that this infiltrated area has cleared up in a large number of cases, and vision has much improved. In the second place ulcers, which have attacked the epithelial, or superficial corneal layers only, leave opacities which are much benefited or are entirely dispersed by massage. I shall quote my article of two years ago, to illustrate my method of applying direct massage to the eye, as I have since seen no necessity for any modification:

"The cornea is rendered insensitive by a 10 per cent solution of cocain, which at the same time, by its action upon the corneal epithelium, facilitates the entrance of the drug used. The head of the patient resting upon the knee of the surgeon, the eyelids are separated with the thumb and forefinger of the left hand, and the massage spoon is held in the right. The cornea is gently rubbed, alternately in a circular and radiating manner, from one to three minutes, and this is repeated as often as is indicated in the individual case. It is to be remembered that the uvea, or region just external to the corneal limbus, nourishes the cornea, the lens and the vitreous, and is the great lymph producer for the eye, particularly the anterior segment. For this reason I desire to lay stress upon the fact that these movements should not be confined to the area immediately adjacent to the opacity, but should be applied not only all over the cornea, but also to the ciliary zone upon the sclera. After the massage has been practiced, I knead the globe with the thumbs of my two hands, carefully but thoroughly. By following out this, the lymph-channels are thoroughly opened, and the activity of the lymph-currents increased. This in itself is not only a means of dissipating the opacity, but allows the medicament used an excellent chance for action. In corneal massage through the lids, as advocated by various authors, it is impossible to obtain the effect in a satisfactory manner, and for two

principal reasons: In the first place, the manner of applying massage through the lids to the cornea, or any portion of the anterior ocular segment is, if I may use the expression, a "blind" one. It is impossible for the operator to tell at just what point he is applying the massage. Again, the method is indirect and cannot be as efficacious as when the massage-spoon is employed."

This instrument I devised about three and a half years ago, and I have used it continuously in suitable cases ever since. It is so arranged that the cornea is thrown into very small furrows, and it will be noticed that any ointment used is held nicely between the forks and can thus be worked into the cornea during the massage.

The figure illustrates the construction of the instrument, which is very simple indeed, being a flat spoon, or more properly spatula, 6 *mm.* wide by 8 *mm.* long, traversed by three grooves, thus making four branches, which are perfectly rounded in order to prevent injury to the cornea. It will be seen that the cornea is thrown into several furrows, which, as the massage-spoon is moved over the surface, include the cornea and circum-corneal zone. This is unattended with any injury and with very little or no discomfort to the patient. In some cases it is unnecessary to use cocaine, so tolerant does the eye become.

I trust I shall not be misunderstood as advocafing a "cure all" method of treatment, or one to be applied indiscriminately to all cases. In the class of cases mentioned, it has aided me materially, and three and a half years' experience with the method convinces me that it is not only rational, but worthy of recommendation for trial by the profession. So far as I am aware, the method is my own. I am informed that Prof. Fuchs of Vienna has an apparatus connected with a battery, with which he taps the opacity, but this, in principal and application, is very different from the plan here spoken of. It is a rational plan, which will, I think, appeal to the observer at once. That it is of assistance in the treatment of an obstinate class of cases, I am satisfied.

EXPERIMENTS WITH THE ROENTGEN RAYS ON THE EYE.

By Dr. F. C. Harnisch.

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As soon as the importance of the Roentgen rays for surgical diagnosis became known, the thought naturally presented itself whether the method might not possibly be of service in detecting foreign bodies or certain conditions in the eye ball.

The preliminary experiments, which will be detailed, were made with pigs', calves' and lambs' eyes. Then a case of a foreign body in an eye, with vision already destroyed, opportunely came under my care and was used for experimentation.

With great difficulty I succeeded in obtaining the various instruments necessary for the work, after which the apparatus gave results as perfect as any that have been published. As the method employed is certainly known to my readers, I will not give a detailed account of it, but merely state a few facts that will be of interest to those working in the same direction. The source of the electricity is a 6-cell storage battery, of 170 ampere-hours each, from which during the operation of the interruption a current of 4 to $4^1/_2$ amperes is indicated by the Edison am-meter, having an average of twelve volts. The Ruhmkorff coil is a 20-inch one and easily gives a 12-inch spark with the necessary electric force. For working purposes I have found that the above mentioned current gives a spark of $5^1/_2$ inches. The interruptor is the original Foucault mercury interruptor, giving at an average of 400 interruptions a minute, the steadiest light in the Crookes tube. The form of the Crookes tube, which I found most serviceable, after numerous compari-

sons with other forms, is about 6 to 7 inches long, about $1\frac{1}{2}$ to $1\frac{3}{4}$ inches wide at the base of bombardment and tapers off slightly towards the cathode. It is of the same general proportions as the tube recommended by Edison, with the exception that the electrodes are differently placed in the latter tube. I think that in my tube the rays are emitted from the convex extremity in a smaller area so that a lead screen is not required to avoid the penumbra, and that the tube itself is easier of application to many parts of the body. The time of exposure in my experiments was usually forty-five to fifty minutes.

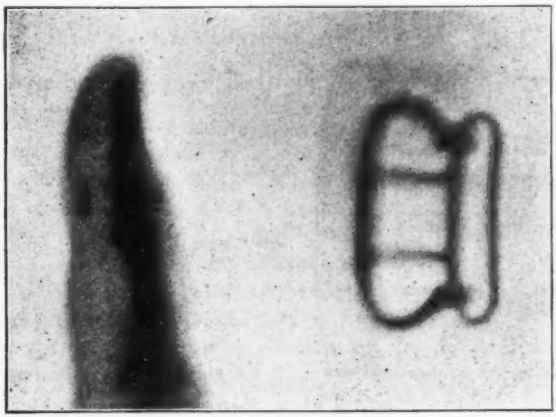


PLATE 1.

To show the distinctness of my skiagraphs, in comparison with those that are shown in other journals, plate 1 is first introduced, although it is not a subject of our direct consideration. It represents the last two phalanges of the left index finger with a small foreign body visible opposite the last joint. This is a piece of graphite from the sharp end of a lead pencil and is approximately one-quarter of an inch in length.

Plate 2 shows the *comparative resistance* to the rays of various bodies. Uppermost is the shadow of a pair of glasses; this shows very distinctly the opacity of the glass and the still greater opacity of metal. To the left of the glasses is a broad vertical object which has four shadings, the lightest, that is to say the lowest, shows one thickness of sheet aluminum, No. 26. Above there is a second, then a third, and uppermost a fourth thickness.

Directly underneath the pair of glasses are seen three pigs' eyes. In the first one the optic nerve is shown by the dark spot in the upper right quadrant; in the upper left quadrant there is a pin; in the left lower quadrant is a faint but distinct indication of the lens. The picture in the middle shows an eye taken directly from in front; the pin was inserted in the vitreous body; nothing is seen of the lens. The right picture beauti-

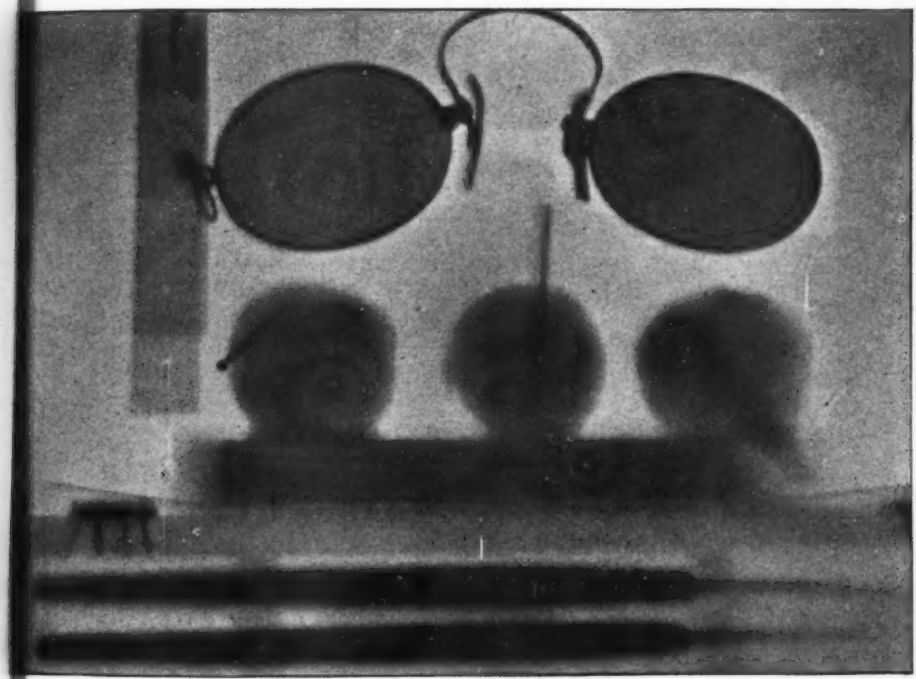


PLATE 2.

fully shows the entrance of the optic nerve in the right lower segment and is also remarkable for a black mark passing upward and to the left from the optic nerve to the lens, clearly indicated by a darker round shadow. Directly in the uppermost segment of the sclera is a small piece of a pin. The dark line in the center, I venture to say, represents the *canalis hialoideus*, because it is directed in the course of this canal, and the eye

on being opened showed no abnormality. This line was not obtained in any of my skiagraphs of other eyes. The eyes rest on a piece of oak $^3/_8$ of an inch high, 3 inches long and $1\,^1/_2$ inches deep. The grain of the wood is well shown. Underneath are the faint outlines of an ordinary small dissecting case containing two instruments, the upper one with an ivory handle, the lower one with a steel handle. The box was closed; in the

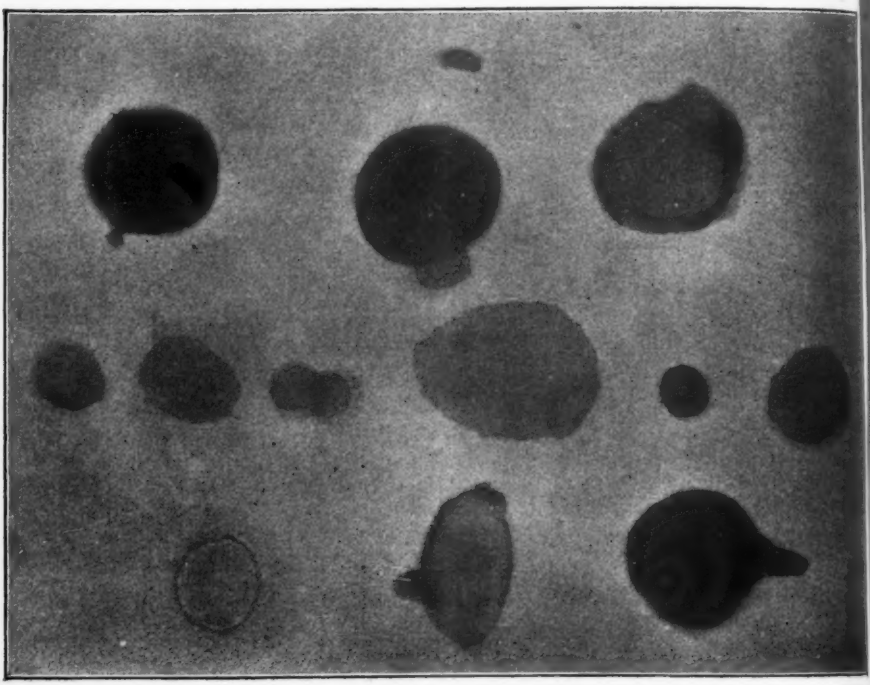


PLATE 3.

frame of the box are seen the hinges. This picture shows that the resistance of the eyeball, as a whole, is about equal to the resistance of a piece of oak $1\,^1/_2$ inches thick and of four thicknesses of aluminum, size No. 26.

Plate 3. This shows different parts of pigs' eyes. Uppermost is a small segment of optic nerve. Beneath this are three round objects; the left one shows an eye containing a piece of

metal; the central one is an eye with an artificial prolapse of the vitreous body on the lower surface, exactly the size of the lens. The entire central part of the picture, which corresponds to the vitreous and lens, is distinctly darker than the periphery representing the surrounding membranes. The right picture shows the sclera, chlorioidea, and retina opened up, with the the vitreous and lens removed.

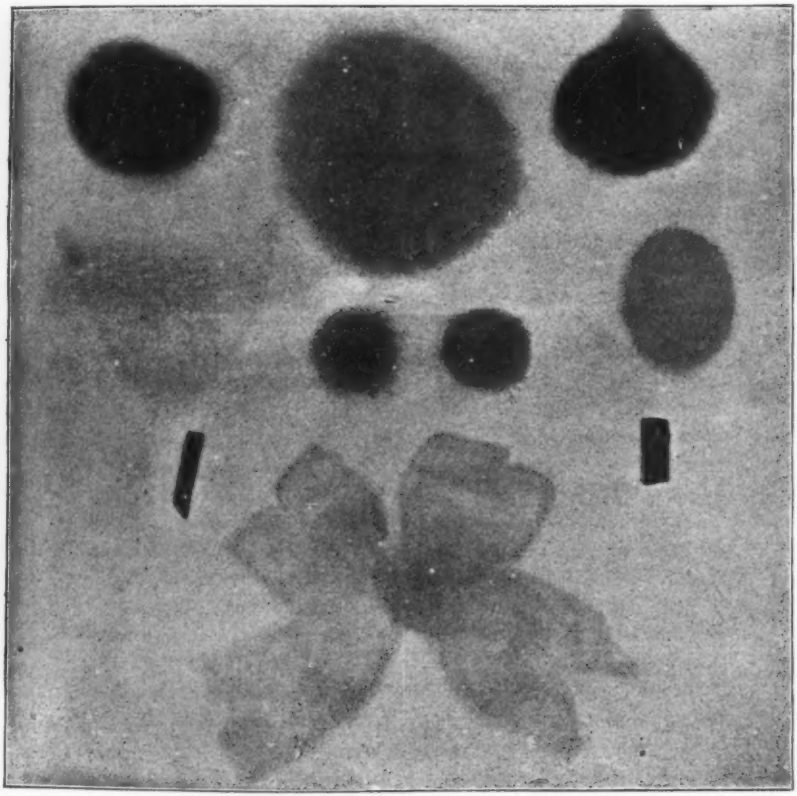


PLATE 4.

In the third row are six shadows. At the extreme left, there is a cornea; the second and fourth shadows represent each a vitreous body spread on the object holder. For some unaccountable reason, these are much darker in the plate than in the negative, while the third figure ought to be heavier than it is

represented. This is a small double circle and shows a lens which was accidentally turned over when the time of exposure was half over. The fifth shadow is also a lens. The right hand shadow is a cornea with the iris. On the lowest line are three objects; the left one is scarcely visible. This is the choroid and retina. The central figure is one-half of the sclerotic coat with the optic nerve. The picture on the right is a whole eye.

In the upper left and right corners are pigs' eyes, the one on the left containing a piece of glass; the one on the right incloses a piece of metal. The other pictures represent parts of the eyes of a calf. Between the pigs' eyes is a large globular body, the vitreous. In the second row of pictures, on the left directly underneath the pig's eye containing the piece of glass, is a large light picture, the choroid and retina, in a single layer. Then come two round bodies, of which the left one showing a cataractous lens which one of the calves' eyes luckily contained, while the right one is a normal calf's lens. In the negative, it is plainly seen that the cataract shows less resistance to the rays than the normal lens. On the right is a round figure showing the cornea. Below there is an irregular outline, somewhat resembling a butterfly. This was obtained by cutting open a calf's eye, removing the vitreous, lens, iris and cornea, and then spreading it out flat. The center represents the entrance of the optic nerve, to the left of which is the sclerotic alone and to the right the sclerotic with the choroid and retina, the darker edges showing the ciliary body. To the left of this picture is a piece of glass 1 1/2 *mm.* thick and on the right a piece of brass 1 *mm.* thick.

It is also necessary to mention that pictures were taken of the lenticular capsule showing that this part of the eye offers hardly any resistance to the Roentgen rays.

From the above plates, and numerous others which could not be represented in this article, I have made the following table, which shows the degree of resistance of the various parts of the eye to the X rays, the most translucent tissue being at the head of the list, the others following in order:

1. Capsule of the lens.
2. Choroid and retina.
3. Sclerotic.
4. Cornea.
5. Vitreous body.
6. Lens.

On account of the invisibility of the Roentgen rays to our visual perception, it is important to ascertain whether the retina itself is excited by them—even if they reached it—or whether the rays are entirely intercepted by the lens and vitreous body. We observed from plate 2 that the degree of transparency of the eyeball is approximately equal to that of the piece of oak wood and the four layers of aluminum. We have also seen from the table that the transparency of the membranes is relatively great in comparison with that of the vitreous and lens. If we could exclude a part of that resistance, we would expose the retina more directly to the influence of the rays. This may be done by turning the eye ball extremely upwards or downwards and directing the rays through the exposed sclera. In this way the retina is reached directly, without the interference of the lens and greater body of the vitreous. At no time could any difference of retinal perception of the rays be experienced. Furthermore, there is also a corroborative proof of this in eyes affected with cataract.

In plate 4, the left lens is slightly more transparent than the normal. I have exposed patients with cataract, as well as others in whom the cataract has been removed, to the Roentgen rays and the result was also negative. We can therefore conclude that the retina is practically insensitive to these rays.

As the eyeball is almost entirely surrounded by bone, which is practically impenetrable to the Roentgen rays, we could hope, at most, to demonstrate a foreign body only in the anterior exposed part of the bulbus. This may be possible to a greater or less extent according to the amount of projection of the eyeball and the configuration of the osseous orbital arch and the nose. In especially prominent eyes, we may hope to obtain a skiagraph as far back as the ciliary body and even farther. Different expedients, such as producing an artificial exophthalmos by injections in Tenon's capsule, as suggested by Dr. Van-Duyse in his article "Les Rayons Roentgen en Chirurgie Oculaire" might be of service in rare instances, but usually are not necessary as the following case demonstrates:

F. P., 23 years of age, laborer, was injured in the right eye by a piece of steel eight weeks before he came under my care. There was a well-marked iridocyclitis with a moderate ciliary injection of the vessels 6 *mm.* above the uppermost point of the cornea, a *staphyloma ciliare*, 2 *mm.* in diameter, was visible.

No foreign body could be detected in this by palpation with a probe, although a slightly increased resistance was noticeable, nor did the ophthalmoscope reveal any trace of it. The whole vitreous was cloudy and the fundus could not be seen.

Field of vision showed no defect; tension was T. — 1; vision = fingers at three inches. The left eye was already effected by sympathetic inflammation of the most violent type. Vision = fingers at ten inches.

I determined to obtain a skiagraph of the injured eye with the hope of finding the position of the foreign body. I was, of course, especially anxious to know if it were in the staphyloma, because, as above mentioned, the probe in being pushed from above downward met some resistance. I first placed the Crookes tube on the outer side of the eye with the sensitive film in the inner angle in such a way as to get the greatest possible exposure of the anterior part of the eyeball. For a steady retension of the film, some pressure against the eyeball was unavoidable and produced frequent motions of the eye and lids so that the negative was unsatisfactory. Then I placed the photographic plate over the right temple and the Crookes tube to the left and in front of the left eye so that the rays passed over the root of the nose through the anterior part of the eyeball onto the plate. An assistant raised and held the upper eyelid while the patient was directed to look down. This position was excellently maintained by the patient for forty-five minutes. Still it was occasionally necessary to lower the lid for a few seconds. Referring to the figures in the adjoining plate 5 and diagram at *a* is visible a darker shadow convex to the right; to the right of this and below (*b*) is a fainter shadow. This fainter shadow I take to be the shadow of the occasionally lowered lid. The darker shadow represents the eyeball, in which a dark streak is noticeable. As this corresponded with the location of the staphyloma, I took it to be the foreign body. These configurations are most visible in the negative, less in the photograph, and least of all in the accompanying plate.

For obvious reasons it was desirable to remove the foreign body. At the beginning of the operation a moderately broad Graefe knife was entered, with its edge forward and downward, 1 *cm.* outward from the external limbus of the cornea and pushed inward and downward into the eyeball, so that its tip was well behind the supposed foreign body; then by carefully

depressing the handle the blade was brought forward until I could distinctly feel increased resistance, as if the flat side of the blade was pressing against a resisting body, which I hoped was the particle I was searching for. The knife was held fixed in this position and I then introduced a small knife above the scar, until, with the aid of scissors, I reached the hard substance, which was comparatively superficial. I seized this with forceps, and tried to remove it by dissecting it out. The greater part of the dense tissue came away, but to my great disappointment failed to show any foreign body. I had merely removed cicatricial tissue. With the first knife I could still feel resistance and, to ascertain whether the foreign body was contained in this, I pushed the tip of the knife several times into the hard mass, which seemed very tough, so much so that I feared to break the knife. Still neither in this way nor by the use of an electro magnet could I find any metal.

PLATE 5.

I am convinced that the dense tissue was cicatricial tissue and that the small streak on the skiagraph was produced by it. Indeed, if the streak had been due to metal, it ought to have been more differentiated from the surrounding tissue. I have photographed other parts of the body (hands, etc.) with scars, but could never detect any trace of them in the skiagraph. This is not surprising, as our knowledge of the transparency of soft tissues to the Roentgen rays is very imperfect. I believe as soon as we know more of the power of the rays, the time necessary for exposure, etc., we will be able to skiagraph the soft tissues and some abnormalities, just as we now frequently differentiate the skin from the underlying fat and muscles. I am making experiments to this end and shall submit the results, whatever they may be, to the readers of the ANNALS at some future time.

Although this case was not as conclusive as I had hoped, it shows conclusively that the Roentgen method may be of great value in occasional cases. No one would think of using this cumbersome method where the foreign body could be otherwise detected.

Some of the points above referred to are not as well demonstrated by the plates as by the negatives. I consequently extend an invitation to any of my confrères interested in this work to call at the laboratory (managed by Dr. O. L. Schmidt and myself) for a demonstration of the apparatus and for a view of the negatives referred to.

103 East Adams St., Chicago.

A FEW CASES FROM MY RECORDS.—Illustrated.

By H. McI. Morton, M. S., M. D.

OPHTHALMOLOGIST TO THE ST. BARNABAS HOSPITAL, MINNEAPOLIS, MINNESOTA.

Pseudo-Erysipelas, After the Instillation of 1-120 gr. of Atropin.

Mrs. K., 36 years of age, consulted me June 12, 1895. She had old corneal opacities and vascular keratitis in both eyes. T= normal. I prescribed atropin (gr. iv to f ℥i) and a boracic lotion, and directed her to use hot fomentations. Her husband called upon me on the morning following, in anything but a cheerful frame of mind, and informed me that after the use of *one drop* of the solution of atropin in each eye, the lids began to get red and swollen, and that now the eyes were completely closed, although they had not repeated the dose. He had been afraid to bring her to my office. I thought this an exaggeration on his part, and at last prevailed upon him to go home and bring her. To my astonishment, when she arrived, I found the symptoms much worse than he had described. The infiltration of both upper and lower lids was so great that the oculo-orbital and oculo-malar sulci were completely obliterated, and the cheeks were intensely swollen to the angles of the mouth. There was much pain of a severe, burning character. The great amount of infiltration and the redness looked not unlike Rhus poisoning. She has not been out of the house, however, and the relation of cause and effect was too marked to permit of any doubt as to the cause of the trouble. The trouble disappeared in a few days, under cold compresses, and a solution of lead, water and laudanum.

Syphilitic Ulcer of the Conjunctiva.

Mrs. K., 46 years of age. Saw the patient April 10, 1893. Had "sore eyes" twenty years ago. They soon recovered, however, and she had had no trouble since until last December. About December 22, 1891, her eyes became inflamed and have continued to get worse. She has specific sores upon lips, hard palate, throat and vagina; cervical glands much enlarged. Gives a clear syphilitic history. The right eye has a light "brick dust" red injection, and on outer corneal limbus, and mostly below the horizontal meridian of cornea, is an ulcer about 4 *mm.* in vertical diameter by 3 *mm.* in horizontal. The edges of the ulcer are firm and the base covered by a thin film. The case rapidly improved under the iodides and mercury and the ulcer of conjuctiva healed rapidly. I saw this case some three months ago, and she was doing nicely, the eye looking clear.

A Severe Case of Blepharospasm, Improved by Stretching the Orbicularis.

Mrs. F. G., 53 years of age. Saw the patient for the first time July 8, 1893. There were violent attacks of clonic spasm of the orbicularis, and of some of the facial muscles. These attacks had lately been separated by very short intervals and would awaken the patient from a sound sleep. The mere excitement of conversing induced an attack which was both ludicrous and pitiful to behold. There were no tender pressure points. Knowing the intractability of such cases to treatment, I was at a loss what to do for a time, but finally advised stretching of the orbicularis under ether narcosis. This was done and followed by relief. The spasms, although not entirely stopped, were much reduced, both in severity and in frequency, for a period of over one year, after which I lost track of the case. My friend, Dr. Rhindlaub, of Fargo, tells me he had the most beneficial effect from the administration of the fluid extract of conium in a case similar to this. It is probable that the irritation was peripheral in this case, for it is the only way I am able to account for the relief.

Since many of these cases have a reflex causation the position of the point of irritation will make each case a law unto itself, and should determine the treatment in each instance.

A Case Illustrating the Fact that Atropin Will Occasionally Disclose Latent Trouble in the Refraction of the Eye, that an Homatropin Solution Has Failed to Reveal.

Miss J. P., 15 years of age. Consulted me for a long standing headache and severe asthenopia. Has been fitted to glasses and wearing O. D. —1.00 sph. and O. S. —1.50 sph. I induced paralysis of accommodation by repeated instillations of Homatropin, extending over two days, and the tests showed —.75 cyl axis 180 in each eye. These lenses were prescbribed and without benefit. After a few weeks of trial, in which there was no improvement, I placed her under atropin (gr. viii to f ℥i), instilled three times daily. After one month of this I tested her and found

O. D. + 1.50 ⊂ + .75x90.
O. S. + 1.50 ⊂ + .75x90.

I prescribed the full astigmatic correction, with one-third spherical correction, and this was attended by relief. I believe that homatropin will, in nearly all cases, be quite as satisfactory as atropin for purposes of refraction; but this illustrates a class of cases in which we have a young, irritable and spasmodic ciliary muscle that will not yield to the weaker agent. In cases of myopic astigmatism, or simple myopia (by homatropin) in a young person, with a history of severe asthenopia, I think it advisable to use atropin for *some weeks* before deciding that one's refracting of the case is correct.

Peculiar Attachments of a Shred of Persistent Pupillary Membrane.

Mrs. C. A. P., 40 years of age. While making an ophthalmoscopic examination I noted this peculiarly attached shred of persistent pupillary membrane.

A NEW EYE MODEL FOR USE IN OPHTHALMOSCOPY AND SKIASCOPY.—Illustrated.

By Clarence A. Veasey, M. D.,

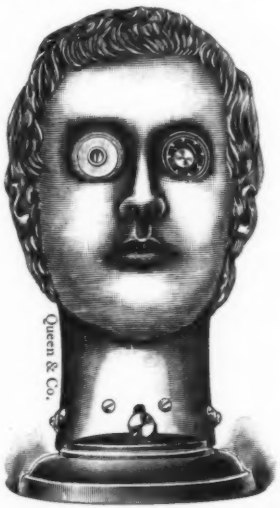
ADJUNCT PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC; CHIEF CLINICAL ASSISTANT TO THE OPHTHALMOLOGICAL DEPARTMENT OF THE JEFFERSON MEDICAL COLLEGE HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE PHILADELPHIA LYING-IN CHARITY HOSPITAL, ETC.

THOSE who have had the opportunity to give instruction to students beginning the use of the ophthalmoscope, using an eye model for the purpose, must have observed the great dissimilarity between the conditions attendant upon the employment of the media and fundus of the human eye and that of an eye model. In the former we have the nose, cheek and the border of the orbital cavity which interpose new conditions that were not found in examing the interior of the eye model, so that no matter how adept the student has become in the use of the ophthalmoscope with the model eye, the new conditions he encounters in his first attempts to examine the interior of the human eye make him, to say the least, rather awkward and the manipulation much more difficult than the one he has been taught, so that he is obliged, to a considerable extent, to begin to study the use of the ophthalmoscope anew.

Many ophthalmic surgeons are well acquainted with the Vienese hard rubber mask that is used to hold the animal's eyes while the different operations that are performed upon the human eye are being practiced so that no detailed description is here necessary. Suffice is it to say that it is a most excellent reproduction of a human face made from hard rubber, the orbital cavities being filled with a clipping arrangement that holds the animal's eye firmly in position for operation, and making the conditions resemble those of the human face and eyes as nearly as possible.

The writer has had constructed for himself an eye model that can be placed in one of the orbital cavities of this mask projecting as far forward as the human eye usually does, which when in position gives the nearest approach to the conditions attending the manipulations of the ophthalmoscope in examining the human eye that has yet been attained.

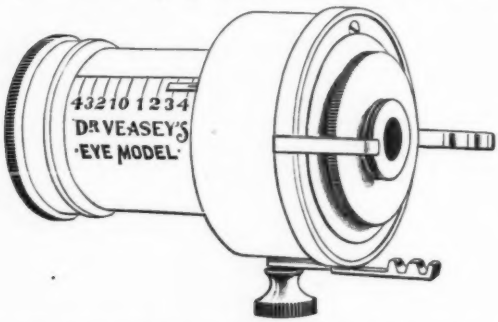
As seen in Fig. 1 the eye model is in position and the nose and orbital border present practically the same conditions that are found in the human head, so that the manipulations of the ophthalmoscope are the same in each. The head may be lowered to a horizontal position or at any angle between the vertical



and horizontal, simulating a patient in bed, and the manipulations of the ophthalmoscope and the light studied under these conditions. For the practice of skiascopy a trial frame from the test case is placed on the nose of the mask precisely as it would be placed on the nose of the human patient.

Fig. 2 presents an exterior view of the eye model, which consists of a tube with an inner and outer wall between which moves another tube. Each tube is about $3\frac{1}{2}$ *cm.* long and the inner tube about 2 *cm.* in diameter, the outer one of course being a little wider. The anterior tube moves between the two walls of the posterior tube by means of a screw and thread movement,

thus giving the least friction possible and preventing the two tubes from sliding apart. In the extreme anterior portion of the front tube there is placed a carefully ground and centered 20 diopter convex lens so that that there is no reflection on it from portions lying in front, as is the case when a lens is deeply situated, to annoy the observer. Around the front tube is placed a collar by means of which the model is adjusted in the Vienese mask or on a stand. Passing backward from beneath the collar is a small indicator which shows upon the scale engraved upon the posterior tube the amount of ametropia. On this scale the myopia is indicated by red figures and the hypermetropia by white figures as is the case with the ophthalmoscope. The posterior end of the tube is closed by a cap that screws on in which is placed a lithographic reproduction of the human retina.



Another cap containing a ground glass disk for use in demonstrating the manner of the formation of images upon the retina accompanies the instrument.

For the purpose of making the examination more difficult and consequently the operator more experienced, there are three small disks with central openings that can be placed in the pupillary opening, thus reducing the size of the pupil from 10 *mm.* to 8, 6 or 3 *mm.*, and with these the reflex is avoided that is common to some means of reducing the size of the pupil.

For those who do not possess the Vienese mask and who do not care to purchase one, the eye model can be placed on a stand as in Fig. 3, when the clip for holding the lenses, both for correcting the ametropia by means of skiascopy, and when it is desired to make a given amount of astigmatism for ophthalmoscopic examination, or for correction, is placed on the model

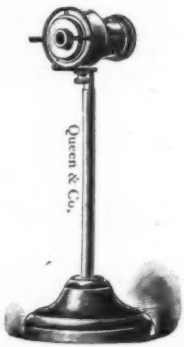
as shown in both Figs. 2 and 3. The model is thus mounted on a tube that slides inside of another tube, thus enabling the student to raise or lower the eye at pleasure.

The model is made of brass, highly polished and lacquered, and the interior of the tubes are blackened.

The different conditions found in the human eye ground may be painted on small disks, placed in the cap at the end of the tube and studied. A lithographic reproduction of the normal human retina accompanies each instrument.

The advantages claimed for the above model are as follows:

1. When used in the mask as primarily intended the conditions for studying the manipulations of the ophthalmoscope more nearly resemble those attending the use of the latter instrument in making examinations of the human eye than have been presented by any eye model heretofore.



2. When a certain amount of ametropia is desired to be studied and the tube is revolved until the indicator points to that amount the latter undergoes no change by a slipping of the tubes during examination.

3. One tube never falls out of the other during examination.

4. The lens is so placed that there are no annoying reflexes from portions of the instrument in front of it.

5. The interchangeable pupils may be employed without any reflexes.

Messrs. Queen & Co., of this city, have very skillfully made the model for me, from whom it may be obtained, and have furnished the above cuts.

47 North Seventeenth Street.

ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

Quarter ending April 1, 1896.

By H. V. Würdemann, M. D.,
of Milwaukee, Wis.

Episcleritis Periodica Fugax—Suppurative Keratitis-Keratomycosis—Tuberculosis of Eye—Subjective Visual Perceptions—Subconjunctival Sublimat Injections—Treatment of Lachrymal Disease—Strumous Ophthalmia and Pediculosis—Post-Diphtheritic Paralysis of the Accommodation—Albuminuric Retinitis—Hyaline Bodies in the Optic Nerve—Amblyopia During Lactation—Sphincterotomia Pupillaris—Sphincterolysis Anterior—Apotomia Iridis—Resection of Trigeminus for Blepharospasm—Dacryocystitis—Etiology of Pterigium—Operation-Indication for Enucleation—Erythropsia—New Cataract Operation—Instruments—Corneal Incisions—Extraction with Concave Incision—Hemianopsia—Melano-Sarcoma of Orbit—Sympathetic Ophthalmia—Acromegaly—Nuclear Ophthalmoplegia—Lachrymal Stricture—Ciliary Ganglion—Beginning of Sight—Esophthalmic Goiter and Thyroid Extract—Cyclops—Pathognomonic Symptoms of Congenital Syphilis—Geographical Origin of Trachoma—Tenonitis—Reflex Ear Disease—Basedow's Disease—Experimental Parenchymatous Keratitis—Blepharochalasis—Hydrophthalmos.

Episcleritis Periodica Fugax.

Fuchs, Ernst. (*Archiv. f. Ophth.*, Heft IV., 1895.) The author cites twenty-two cases of a transitory and periodical form of episcleritis which shows itself as a deep injection of violet color in the episcleral and scleral tissues. There is often swelling of the inflamed area, somewhat different from that of catarrhal inflammation in that it is a hard infiltration. The disease behaves more like an inflammatory edema than inflammation with exudation. It is usually limited to some quadrant of the eye changing in course of a day or two to another spot or

appearing in the other eye. In only the severest cases does it surround the cornea. In fourteen of his cases he had seen characteristic episcleral nodes with swelling which rapidly disappeared and had only an external likeness to ordinary episcleritic nodes. The disease may appear in both eyes or it may alternate from one to the other. In several instances only one eye became inflamed. The disease is attended by pain, lachrymation and photophobia. The eye is tender when pressed through the lids; in one case intense headache existed. Pain generally begins with the onset of inflammation; as the redness diminishes it as a rule disappears. There is swelling of the eyelids in most cases. In two instances there were noticed fine gray points or infiltrations on the edge of the corneal limbus. The iris is sometimes hyperemic. Deep ciliary injection with painful accommodation occurred in eight cases, pain and difficulty of convergence in three cases; odema of Tenon's capsule and exophthalmus in one case. The course of the disease varies from one or two days to eight days. It exists in the majority for about a year, having relapses with intervals of some days or months. In some cases there were two or three attacks in the year and others there were intervals of two or three weeks between the attacks. In one case there was a free interval of a year. The disease was not often observed, although he had seen fifteen men and seventeen women, the oldest 51 and the youngest 21 years of age; the average 35 years of age. Most of these patients were well nourished. Uric acid diathesis existed in a few cases. This may be a factor and accordingly he has limited their diet to more of a vegetable nature and has given Vichy mineral water. Four of these cases had previous attacks of acute rheumatism. The episcleritis was not intermittent in any of the patients, although in three cases there was found enlargement of the spleen. Many of these cases have migraine and neuralgia of the fifth nerve. He has noted two other relapsing and periodic eye diseases that could be confused with episcleritis fugax. The one is a relapsing form of edema of the lids which is paler than the surrounding skin, disappearing as a rule in a few days and lasting in some cases only one or two days. Relapsing erosions of the cornea and little infiltrations at the corneal limbus are sometimes seen in persons of middle life, occurring in one or both eyes two or three times a year. Neither form is described in text books.

Contributions to the Pathological Anatomy and Bacteriology of Suppurative Keratitis in Human Beings.

UHTHOFF AND AXENFELD. (*Archiv. f. Ophth.* Abth. I, 1896.) This is an article of 130 pages going extensively into the pathology and describing twenty-four cases. These include superficial and perforating ulcers, hypopyon keratitis, keratomolacia, panophthalmitis, etc., of local origin or appearing in the course of general diseases from different forms of infection. There were thirty-five cases of typical ulcus corneæ serpens, ten cases of hypopyon keratitis, two cases of keratomalacia, one case of keratomycosis aspergillina, two cases of beginning panophthalmitis with corneal abscess. In these there were found the Frankel-Weichselbaum diplococcus (pneumococcus) in twenty-six cases of which four cases were typical ulcus corneæ serpens and two cases beginning panophthalmitis; pneumococci at the same time with other micro-organisms in seven cases; five of these were typical ulcus serpens; no pneumococci but other micro-organisms in thirteen cases, four cases were typical ulcus serpens; negative bacteriological findings in four cases, two of these ulcus serpens. There was one case of keratomycosis aspergillina arising from dirt being thrown in the eye, causing a typical hypopyon keratitis. The eye was not enucleated although bacteriologic examination of the pus was made. Experimental inoculation of animal corneæ was done in all cases and results noted. The literature is extensively quoted.

Keratomycosis.

SCHIRMER, (*Archiv. f. Ophth.* Abth. I, 1896,) reports a case of keratitis from aspergillus which he had seen in the clinic, and which came to enucleation. Microscopic sections were made which showed the inflammatory process to have been caused by the mycelium and similar in form to other kinds of suppurative keratitis. This is the first case in which microscopic examination of the eyeball has been made although there have been a number of cases described from clinical view.

The Relation of Tuberculosis of the Eye to Tubercular Disease of Other Organs, With Remarks Upon Diagnosis and Prognosis.

DENIG, RUDOLF. (*Archiv. f. Augenheilk.*, Bd. XXXI, Heft IV, 1895.) For the reason that the assumption of local tuberculosis of the eye has not yet met with general acceptance

amongst ophthalmologists, the author searched the literature for cases of tubercular eye disease in order to find out in what proportion of cases of eye tuberculosis proofs of general tuberculosis had been shown. He examined the literature, finding reports of 200 patients who were supposed to have tubercular lesions of the eyes, to find out if there were proofs of diseased lungs, bones or glands. The result was as follows: In reports of seventy-two cases of conjunctival tuberculosis there were fourteen who were suspected to be otherwise tubercular subjects; in only seven were there proofs of the existence of tuberculosis in other organs; in three there were evidences of healed lesions. In eighty-six cases of tuberculosis in the iris and ciliary body sixty-seven had no symptoms in other parts of the body. There were forty absolutely healthy, twenty-seven suspected and four had evidence of pre-existing tubercular disease. Of thirty-six cases of tubercular disease of the choroid in sixteen there were no other evidences. In the examination of 200 patients who had tubercular disease of other organs in only five did he find changes in the fundus which could be ascribed to a tubercular cause. He concludes that we must accept the possibility of ocular tuberculosis as freely as local lung or joint tuberculosis in the sense of a primary infection. This form of local tuberculosis must be differentiated from the metastatic form. The latter seldom occurs. The prognosis depends upon the form of the disease; as regards life is favorable if not a granulation growth, as this tends to metastasis and sooner or later threatens life. Metastatic ocular tuberculosis has an unfavorable prognosis.

Subjective Visual Perceptions.

ZEHENDER. (*Klin. Monatsbl. f. Augenheilk.*, November 1895.) In a series of articles maintains the following: (1) The cirulation of the blood in one's own eye can be easily seen without the aid of any apparatus by even pressure of the finger on the ball of the eye. (2) That the visibly circulating blood is not in the capillaries of the retina but in the choroid. (3) The blood current is not regular, sometimes is accelerated, slowed or at standstill or even flows backwards. This irregularity seems to be influenced by steady fixation of the eyes. (4) That the movement is not synchronous with the action of

the heart or respiration. (5) The vessel walls are not seen, the blood apparently flowing in channels of its own choosing. (6) Bright points called by Pflueger "cell explosions" are to be seen. (7) Zehender agrees with others that objective light first produces chemical decomposition of the retinal pigment and secondarily involves the rods and cones; that similar pigment decomposition may be produced through the blood. (8) The pigment grains and their movements are under favorable conditions visible in one's own eye. (9) By the movements and changes of the pigment grains there arise at times strikingly regular polygonal figures, similar to those described by other authors. (10) These figures and pictures of retro-retinal structures behave in many respects like magic lantern pictures, perhaps comparable to what creatures with facetted eyes may see. Zehender has not remarked that the images alter their relative positions with ocular or head movements.

Subconjunctival Sublimat Injections.

SEGGEL. (*Klin. Monatsbl. f. Augenheilk.* November 1895). Reports four cases in which he tried injections of bichlorid of mercury subconjunctivally. One was a case of perforating injury of the ciliary region seen within twenty-four hours with extrusion of vitreous, prolapse of iris and purulent infiltration of cornea, anterior chamber filled with bloody exudate. Bead of vitreous and iris cut off and injection of sublimat solution made under conjunctiva; great pain, necessitating hypodermatic of morphia, followed. Chemosis and odema of lids ensued and increased, and the eyeball became tender despite two more injections, local applications of cocain and atropin. On a fourth injection the exudate in pupil became smaller, chemosis, odema and tenderness disappeared. After fifth injection the corneal infiltration began to clear and patient was later discharged cured. In another case the patient had orbital cellulitis developing from infection from periostitis of one of metatarsal bones of the foot, characterized by sudden exophthalmos with chemosis, swelling of lids and fever. One-twelfth of a syringeful of 1:1000 sublimat solution was subconjunctivally injected. The next day fever had gone and within five days the exothalmos and swelling had completely subsided. He notes that the pain resulting from an injection may require

iced compresses to relieve it. It is important to make the injection as far as possible from the limbus and to use no fixation forceps. Seggel says that adhesions seldom occur between conjunctiva and sclera and are but temporary. Daily injections are only required, if at all, when suppuration is threatening.

Treatment of Lachrymal Disease.

FROELICH, RICHARD. (*Klin. Monatsbl., f. Augenheilk.*, January 9, 1896.) The author employs rather radical treatment in dacryocystitis, using chlorid of zinc injections, with after-probing, in much stronger proportions than have hitherto been advised. He first drops cocain in the conjunctival sac, washes out with 1:5000 sublimat, injects a little 5 per cent cocain solution in the tear duct and sac and then fills the entire eye with vaselin over the cornea to shield it. The patient carries his head well back and the cavity of the orbit is filled with a 4 per cent solution of sodium chlorid, and then a caustic solution of chlorid of zinc (10 per cent) is injected into the sac and allowed to remain in three minutes or more, when it is washed out by a 4 per cent solution of sodium chlorid. If any of the caustic escapes it is at once neutralized by the salt solution and the cornea is likewise protected with the vaselin. If well cocainized, no pain and but little reaction occurs, one to two hours afterwards. There is sometimes a little odema of the lids. This may be repeated on a second or third day. Twenty-four hours after using the caustic the canal is to be washed out by sublimat solution, and generally in favorable cases no pus is to be seen after the first injection. Eighteen cases were treated in this manner, of which ten were rapidly cured. Four months was the longest time of any case under treatment, the latter where the disease had existed ten years. In the eight cases not cured by one injection three were relieved by a second injection. In the worst case there were four injections made, the last one after three months. There were five that were not fully relieved.

In addition to the caustic method where stenosis exists, Fick and Froehlich use Ottowa's method of lachrymal massage, putting in a small sound, massaging the canal up and down, gradually increasing the size of the sound, as it is found that it comes out easily. Froehlich claims that rapid dilatation of stricture is obtained by this method.

Strumous Ophthalmia and Pediculosis.

NORRIE, (*Centralbl., f. Praktische Augenheilk.*, October, 1895,) reiterates the statement previously made in a Danish publication that so-called scrofulous ophthalmia, be it blepharitis, phlyctenular conjunctivitis or keratitis, is often caused by pediculi capitas. He has continued his observations and believes that the pedicula lead to ulceration of the scalp from scratching, and these ulcers become infected by streptococci. The fingers become covered by bacteria, which are rubbed into the edges of the eyelids and conjunctival cul-de-sac and inoculated into the cornea.

Such a cause is not common in America, even in our tenement house districts.—ED.

Post-Diphtheritic Paralysis of the Accommodation.

MOLL, ALFRED, (*Centralbl., f. Praktische Augenheilk.*, January, 1896,) comments upon 150 cases of post-diphtheritic paralysis of the accommodation. In 145 cases it was possible to fix the beginning of the paralysis, which varied from two to eight weeks after the diphtheria, although in one case it came on immediately. Paralysis existed on an average of four weeks and passed away in all cases. The amount of accommodative paralysis varied from 1.5 to 6 diopters, which was estimated by the strength of lens necessary to read small print at 24 *cm.*, after correction of the refractive error. In hyperopic cases there was relaxation of the latent error. In one case where myopia existed in one eye and hyperopia in the other the patient could still see to read, but proper correction proved that the amount of paralysis was the same in both eyes. In only four cases was this combined with sphincter paralysis. In sixteen (over 10 per cent) there was paralysis of externi with double images. In three there was paralysis of the abducens. There was one case of monocular ptosis where the other museles were not affected. One instance of insufficiency of the interni with crossed double images at least eight months after the diphtheria. In most of these cases there was paralysis of the soft palate and pharangeal muscles, light ataxic symptoms and loss of the knee reflex. Ophthalmoscopic examination was negative except in one case where coloboma of the optic nerve was found.

Prognostic Value of Albuminuric Retinitis.

POSSAUER (*Beitr. z. Augenheilk.*, Heft, XV, 1895), after studying the records of 67,000 patients seen in Haab's clinic in Zurich, finds that albuminuric retinitis was observed in only 131 cases (1.9 per cent) Authors vary greatly as regards frequency of retinitis in kidney disease: 6.7 per cent. (Schweigger) to 33 per cent (Galezowski.) Most writers agree that as a rule death occurs within two years at least after appearance of the retinitis. Possauer has seen seventy-two cases, thirty-nine in private and thirty-three in hospital practice; of the latter there were fourteen men, all of whom died within two years; of the nineteen women thirteen died within two years, two after longer time and four were still alive. The longest period of life observed was six years. Of the thirty-nine private patients (twenty-six men and thirteen women) sixteen men and seven women died within two years. In those still living the retinitis is dated from a minimum of two and a quarter to a maximum of eleven years. The better surroundings of private patients give them advantages, but even here the mortality is 53 per cent in the first two years.

Hyaline Bodies in the Optic Nerve.

SACHSALBER (*Beitr. z. Augenheilk.*, Heft, XXI, 1895,) had the opportunity of an extended clinical observation, with post mortem examination, of a case. In a woman with good vision there were found upon ophthalmoscopic examination hyaline bodies in the optic nerve extending into the vitreous 3 to 5 D, V and F nearly normal. Nerve symptoms developed and patient died of carcinoma, but the post mortem showed no pathological changes except in the brain. Examination of the eyeballs after preparation and microscopic section showed that the hyaline bodies were mostly in the region of the lamina cribrosa or in neighborhood of the choroidal foramen. They exist in several layers of the retina, mostly in the outer granular, the granules of which are pushed out of place. The nerve layer is intact; some of the hyaline bodies are behind the lamina in the nerve proper. They are of different shapes and sizes, are homogeneous and drop like highly reflecting bodies, staining well to eosin. A small number have nuclei. The smaller ones deflect the course of the nerve fibers, but the larger bodies seem to produce

a breaking of their continuity. The nerve substance seems to have more than the usual number of cells and nuclei, except in some places near the bodies where the structure seems homogeneous. The walls of the vessels are thicker than normal, the adventitia having no nuclei and the capillary vessels are plentiful; on account of the latter and because of the increase of cells the process may be deemed of an inflammatory nature. The lamina oribrosa is degenerated and thin. These bodies seem to be composed of homogeneous protoplasm and are probably of degenerative origin. He refers extensively to the literature of the subject and concludes that these bodies are truly hyaline; that they result from degenerative changes of the connective tissue; that despite apparently otherwise normal fundus and vision there is a chronic interstitial neuritis.

Amblyopia Occurring During Lactation.

Heinzel (*Beitr. z. Augenheilk.*, Heft, XXI, 1895,) reports three more cases of optic neuritis occurring in nursing women, from the hospital (two) and private (one) practice of Prof. Fuchs:

1. In a woman 34 years of age who had anemia, dysmenorrhea, who was otherwise apparently healthy, had complained in seventh week after birth of her first child of pain in head and orbits and of diminishing vision. Examination showed slight tenderness on pressure, grayish infiltration of the papille, retinal veins swollen, arteries small, vision lessened and photophobia. Several days later appearances grew worse. Swelling of disk rose to 2 D. in R. E., 3.5 D. in L. E. Retina about disk for 2 disk diameter became grayish, and V diminished to counting fingers for R. E. at 3 *m.*, for L. E. at 1 *m.* Slight gray atrophy followed, but with useful vision, as patient was able to see small print with both eyes.

2. An anemic woman 22 years of age had miscarriage at seven months; fourteen days before rich secretion of milk set in. Although the child died after nursing half an hour, the secretion of milk persisted for seven weeks, flowing spontaneously. Shortly afterwards she noticed defective vision in the right eye. She complained only of her eyes, which were outwardly normal. The edges of the papillæ were seen to be wooly, the retina in the neighborhood was grayish, the veins larger and

the arteries smaller than normal, more in the right than in the left. Vision: R., $^{6}/_{12}$; L., $^{6}/_{6}$. Visual field somewhat contracted; under the fixation point of R. E. was a scotoma for red and green. Appearances changed but little during a month of observation and treatment by sweat cure. Vision in R. E. sank to $^{6}/_{18}$.

3. Woman, 38 years of age, otherwise healthy; mother of three sound children. In last three weeks of her pregnancy had headache and few days after delivery had failure of vision. Papillæ were found greatly swollen, with patches of infiltration and small punctiform hemorrhages and new blood vessels near the disk. In three months the vision became $^{5}/_{6}$ and the V. F. normal; the fundus apparently normal except dark irregular discoloration and radiating grayish streaks at the macula. Heinzel thinks that the neuritis in these cases pursued a peculiar course, in that the somewhat intense inflammation resulted in partial atrophy with but little diminishment of vision. He thinks that the cause was autointoxication, due to lactation.

(The first volume of the Hungarian Archives of Ophthalmology contains twenty-three articles from Schulek and his assistants; written from 1874 to 1895, and hence some of these have only an historical interest.)

Sphincterotomia Pupillaris—Sphincterolysis Anterior Apotamia Iridis.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895) in a series of three articles described (1) an operation of cutting away posterior synechie, (2) of freeing anterior synechie from corneal adhesions, (3) of freeing the iris when extensively attached to the cornea; all supposed to prevent the evil results attending freeing of such synechie when done by the forceps. He uses very thin and narrow knives, similar to the Grafe form.

Resection of Superior Division of Trigeminus for Blepharospasm.

OTTAVA *Ungar. Beitr. z. Augenheilk*, I, 1895) has resected this branch of the trifacial nerve with success and safety in three cases of idiopathic blepharospasm in which medicinal methods have failed.

Treatment of Chronic Dacryocystitis—New Sounds.

NEUPAUER (*Ungar. Beitr. z. Augenheilk.*, I, 1895) slits up the lower canaliculi, presses out the contents of the sac, uses modified conical Bowman's sounds and washes out the lachrymal passages with the Anel's syringe, but with modified fenestrated canalua, by which the canal and sac may be cleansed or injected without causing the liquid to pass into the nose.

Etiology of Pterigium—Operation for Pterigium.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895) in these two articles shows that pterigia arises from irritating causes, such as intense light or temperature and dust, and endeavors to show that the irritating qualities of the ultra violet rays of light (which exist in white light) are an important factor. Most foreign bodies, such as dust particles, remain longest upon the nasal side of the conjunctiva. Pterigia start from infolding of the conjunctiva upon small erosions at the corneal limbus. Continued irritation causes growth. Foreign bodies are frequently found at the point of the pterigium. Pinguecule frequently become transformed into pterigia. The ultra violet rays affect the cornea and conjunctiva by photochemical irritation.

Indications for Eneucleation.

GROSZ (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) gives indications for removal of eyes as follows: (1) Malignant growths (carcinoma, sarcoma glioma.) (2) Danger from sympathetic ophthalmia. (3) Pain, such as is caused by absolute glaucoma. (4) Cosmetic purposes, as in *ecstasia bulbi totalis* and staphyloma, when other operations are not indicated. In Schulek's clinic during ten years 3.5 per cent of all larger operations (8,670) in number were eneucleations (306). Of these 10.7 per cent were done for indication I; 66 per cent for indication II; 9.8 per cent for indication III, and 14.8 for indication IV.

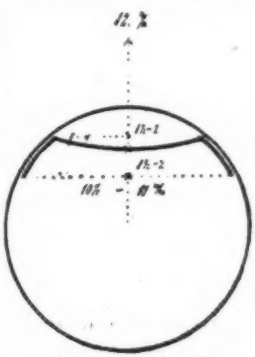
Erythropsia.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) investigated the reasons for erythropsia. He tired his eyes by the ultra violet rays of the spectrum in a dimly lighted room; when passing into the light and looking through a stenopaic slit or

through his hands partly closed all objects appeared red. Control experiments were also made. He *found that the phenomena were more readily evoked* in aphakic eyes, especially where a large iridectomy had been done, *than in healthy eyes.* He cites the case of a cataract patient who had red vision for five months after the operation. He believes that the cause of erythropsia is not entirely in the retina, but in a measure in the primary brain cells. It appears because the ultra violet centers become tired and allow of overaction of the red. He defines erythropsia as a regenerative condition of the red-green sight substance caused by photo-chemical irritation which has created a condition of exhaustion in the brain cells.

A New Cataract Operation—Instruments for Cataract Extraction—Experiments Upon Corneal Incisions—Cataract Extraction With Concave Incision and Retention of Round Pupil.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) in this series of articles describes his own peculiar method and results of cataract extraction. He gives statistics of 1,025 operations, 418 by his and 605 by other methods. A diagram of the corneal wound he is accustomed to make is here shown. He claims that he obtains round pupils in 87.6 per cent, has iris prolapse in but 10 per cent; that he has first class successes as regards vision in 69.75 per cent, and loss of eye in only one instance where his method has been practiced. His instruments are peculiarly his own.



"The Schulek Schnitt."

Hemianopsia Due to a Lesion in the Occipital Lobe.

MEY (*Centralbl. f. innere Medicin*, October 19, 1895,) cites a case and states that a few instances are on record in which injury of the temporal lobe has produced hemianopsia. A boy 16 years of age fell and injured his occiput. There was a compound fracture with depression. The depressed bone was removed by operation. The transverse sinus was found to be

torn, the cortex of the brain in the neighborhood was contused. The defect in the skull was about the size of a florin, situated at junction of parietal, occipital and temporal bones, the lower boundary being formed by the transverse sinus. The anterior portion of the right occipital lobe was implicated. General condition good afterwards with rapid recovery. A few days later he complained of headache with difficulty of sight and hearing. In two weeks he could hear perfectly again, but vision remained poor. Could not read easily and walking became unsteady. Well-marked left sided hemianopsia with limitation of V. F. and normal fundus were found. Partial improvement in sight occurred, but hemianopsia persisted. Mey thinks that the defective sight and hearing were indirect symptoms brought about by the injury.

Melano-Sarcoma of the Orbit.

ACHENBACH (*Archiv. f. Pathol. Anat. Physiol. u. Klin. Med.* B. II, 1896,) describes a case of orbital growth beginning in the petrobulbar tissues. Most cases in literature report such as arising in the eyeball, mostly in the uveal tract. Very few are reported to have arisen primarily in the orbital tissues. A woman 65 years of age had noticed for several months that the right eye protruded and that there was double vision, which did not disappear under medical treatment with electricity and iodide of potassim. Ophthalmoscopic examination was negative, the vision slightly diminished. Eye was enucleated with a considerable part of the orbital contents. Half a year later the patient was well. Microscopic examination showed a strongly pigmented sarcoma especially rich in cells. The eyeball itself was entirely normal.

Experimental Study Upon Sympathetic Ophthalmia.

BACH, L. (*Centralbl. f. Bakter. Parasitenkr. u. Infektionskr.* I., see also *Archiv. f. Ophth.*, Abth. 1, 1896, January 18, 1896.) Since Deutschmann had brought forth his migration theory in 1889, there had arisen both defenders and adversaries. Bach himself belongs to the latter class, as in his ophthalmological and bacteriological studies he had gone over Deutschmann's work without obtaining any positive results. He had also been unable to find any evidence in support of the bacterial theory in eyes enucleated during or after sympathetic inflammation, although attended by inflammatory changes. He

could not find communication between the central and peripheral ends of the optic nerve after resection during sympathetic inflammation. Bach does not believe in the migration theory but supports the ciliary nerve view.

Acromegaly With Ocular Symptoms.

NONNE. (*Deutsche Med. Wochenschr.*, IV., January 23, 1896,) at a meeting of the Aerztlicher Verein, Hamburg, February 5, 1895, showed a case of acromegaly in a woman, 41 years of age, who had atypical tabetic symptoms; V. F. normal for white but contracted for colors; beginning optic nerve atrophy with slight diminution of vision; double myosis; diminished reaction of the pupil for light and accommodation; absence of patellar reflex; lancinating pains in both legs; but no other common symptoms of acromegaly.

Nuclear Ophthalmoplegia Complicated With Spinal Disease.

FÜRSTNER, (*Deutsche Med. Wochenshr.*, IV.. January 23, 1896), at a meeting of the Unterelsässischer Aerzteverein, Strassburg, May 4, 1895, described a case in a male, 18 years of age, in whom specific and inherited causes could be excluded, although his mother had paraplegia. He had carried a heavy weight on the right shoulder for some distance and fell down in the street. Since that time has had severe pain in the shoulder and was weak in the arms; has left-sided ptosis and loss of ocular muscular function. Fourteen days before the accident he had double vision; right-sided abducens paralysis existed after the accident. Pupil reacts well to light and accommodation, but the right more slowly than the left. The vision and the fundus are normal. Nystagmus follows examination and after each electrical treatment ptosis seems temporarily less. There is weakness and atrophy of the shoulder muscles, principally of the deltoid. The hand pressure is weak. Muscular reflexes to strong faradism are weak; general sensibility is intact; voluntary muscular contraction such that closure of the eyelids fatigues the muscles quickly. After excluding all possible causes except alcoholism for the temporary double vision before the accident Fürstner thinks that the both affections may be due to the fall and to be of a hemorrhagic nature. This combination is seldom seen.

Treatment of Strictures of the Lachrymal Duct.

VULPIUS, WALTHER, (*Deutsche Med. Wochenschr.*, VII., February 13, 1896), thinks that more than 50 per cent of cases of lachrymal obstruction arise from hypertrophic changes in the nasal membranes and but few from atrophic rhinitis. Conjunctival affections are not a frequent cause although infection through the canaliculi may arise from plepharitis and conjunctivitis. Constitutional conditions give rise to suppurative disease of both conjunctival and nasal nature from which dacryocystis may result. He believes that most cases of the latter disease can be cured by nasal treatment and remarks that many oculists become skeptical regarding the cure of lachrymal stricture on account of their poor success in treatment. He says that he has accomplished more satisfactory results in his own work than where such cases have been treated solely from the standpoint of the oculist, by the usual dilation with sounds and weak, astringent injections. He refers to the various methods of treating dacryocystitis and stenosis by injection of strong caustic solutions or by weak irrigation treatment, by large and small sounds, by cutting operations in the canal and obliteration of the lachrymal sac and compares them with treatment by permanent styles. He prefers to put in a permanent style of the size No. 4 to 5 Bowan, which is modelled to the length, size and curvature of the nasal duct. It is made of silver wire, gold plated, of a length of 5 to 6 *mm.*, the lower end slightly conical and the upper bent flattened on one side. Before using such he always passes in Bowman's sound and dilates the stricture to No. 4 or 5, slitting the lower canaliculus a little. Only when entirely occluded is the canal to be opened by a straight Weber's knife. A style of this kind may be easily worn not only for days and weeks but also for months and years without irritation, and after a short time the patient does not notice the presence of the wire. It may be necessary to remove the sound for polishing once a month or once in two months. There is sufficient drainage between the style and the walls of the duct to allow of the passage of tears and even for injection. The permanent style treatment is preferable to other dilating methods for both the patient and the physician because it is not at all painful. The only complication which he has noticed in a few cases has been the formation of little polypi at the opening of the canal. These should be snipped away and seldom recur.

Experiments on the Ciliary Ganglion.

APPELANT, HUGO (*Deutsche Med. Wochenschr.*, VIII., February 20, 1896), at a meeting of the Physiologische Gesellschaft, Berlin, January 24, 1896, reported on experiments on the ciliary ganglion to settle the controversy as to its nature, whether belonging to the spinal or sympathetic system or being a mixed ganglion. He resected the oculomotor nerve at the base of brain before its anastomosis in a number of kittens and killed them from 8 to 14 days later, making dissections, finding that there was wasting of this nerve but no degeneration of the ciliary ganglion. He concludes that the ganglion belongs to the sympathetic system.

The Beginning of the Sense of Sight in the New-born.

STEINER (*Deutsche Med. Wochenschr.*, VIII., February 20, 1896), at a meeting of the Nieder-Rheinische Gesellschaft für Natur und Heilkunde in Bonn, June 17, 1895, had an interesting paper upon observations made on young animals. He found in dogs and cats that on the fourteenth to fifteenth day the visual centers could be excited, as shown by movements of the head following objects. Commonly the dog does not see until twenty-three or twenty-four days after birth, when central vision begins, peripheral vision not coming until about the fortieth day. Von Raehlmann found that children began to see about five weeks after birth, but not to observe objects until about the fifth month, and that the visual centers are not fully developed until this time.

Exophthalmic Goiter Treated by Thyroid Extract.

SILEX (*Berlin. Klin. Wochenschr.*, VI., February 10, 1896), at a meeting of Berliner Medicinische Gesellschaft, January 29, 1896, reported cure of Basedow's disease by thyroid extract. Patient took 6 tablets a day, in all 120 tablets which produced a quick result. Senator had this patient at his clinic but had obtained no improvement.

SENATOR (*Berlin. Klin. Wochenschr.*, V., February 3, 1896), at previous meeting of the same society, January 22, had not as yet seen any result from thyroid extract in exophthalmic goiter. He stated that as the latest theories regarding the causation of the disease showed that the gland's function is

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greatly increased and theoretically we should give substances which would produce an antagonistic action. He excludes sugar and other carbohydrates from the diet and administers iodin.

Cyclops.

LOVINSOHN (*Berlin. Klin. Wochenschr.*, February 10, 1896), at a meeting of Berliner Medicinische Gesellschaft, January 29, reported birth of a cyclops delivered at the eighth month having two eyeballs in one socket half a *cm.* apart.

Pathognomonic Symptoms of Congenital Syphilis.

SILEX (*Berlin. Klin. Wochenschr.*, VII., February 17, and VIII., February 21, 1896), refers to the typical symptoms. The diagnosis is more difficult after the fourth year, especially when complicated by scrofula or rickets. After this time the eye specialist is in a better position to judge of the existence of inherited syphilis than the general practitioner. Fournier reported that the eyes were affected in 101 out of 212 congenital syphilitics. In only eighty-two were osteo-plastic changes noted. In 62 per cent to 83 per cent of cases we find keratitis. Pathognomonic symptoms are often found by the ophthalmoscope. In small children such examination is facilitated and is allowable by ether anesthetization. He considers choroiditis areolata a typical manifestation. In two cases he had made sure of the existence of a liver gumma by the co-existence of this symptom. This was proved on autopsy. The peculiar forms of teeth described by Hutchinson and Knies and cicatrization of the face and membranes are referred to. In discussion Köbner lays weight upon the fact that syphilitic children have many varieties of teeth and that diagnosis is to be made by co-existence of several characteristic lesions. Choroiditis areolata is found after other diseases and the disseminate form is more characteristic. Hirschberg reiterated his statement that choroiditis areolata, serpiginata and disseminata were all believed by him to be results of congenital syphilis.

Historical Account of the Geographical Origin of Trachoma.

HIRSCHBERG (*Berlin. Klin. Wochenschr.*, VIII., February 24, and IX., March 2, 1896), states that the introduction of trachoma in Europe was due to the Egyptian campaign of

Bonaparte in 1798. The disease had existed for many years before amongst the Mohammedan races and had been prevalent for untold ages in the vicinity of the Nile. It was known to the Egyptians, the Israelites, the Greeks and the Romans. References to authors of antiquity are given.

Inflammation of Tenon's Capsule (Tenonitis) and Its Relations to the Distemper of Dogs.

ZIELINSKI, v. NENCKI and KARPINSKI (*Berlin. Klin. Wochenschr.*, IX., March 2, 1896), make observations upon an epidemic of tenonitis of a peculiar form occurring in a family arising from infection from a pet dog with distemper, the dam of which had also had the disease. It appeared first in the servant, from whom three children, a man 32 years of age, a woman and an old man 76 years of age afterwards became infected. The dog was examined and had exudation in the conjunctiva, protruding and immovable eyes, discharge from the nose, sneezing, fever, etc. Cultures were made from the fluid of the conjunctival odema of both the dog and human cases showed leucocytes and a peculiar coccus, the same micro-organism appearing in each case. The symptoms of the disease are the same in animals as in human beings, beginning by malaise and fever, the eyes tearing and being sensitive to light, the conjunctiva somewhat swollen, especially the retrotarsal folds being filled with serum. The eyeballs push forward and are somewhat immovable, attempts at movement causing pain. In animals corneal complication as ulcer and staphyloma or panophthalmitis may follow. There is loss of appetite and vomiting, constipation first, and then diarrhea; catarrhal inflammation of the nasal membranes, pharynx and larynx with dry cough; depression, deafness, blindness and dementia may follow in animals; there is itching of the skin followed by an exanthem something like pemphigus (in animals); the fever is atypical; its course runs three to four weeks. They conclude that distemper can be communicated to the human being and that both the clinical course and bacterial examination show a likeness. It is a contagious disease caused by a micrococcus similar to that of Rosenbach in appearance, but differing in its chemic and biologic relations. The tenonitis is but a symptom of the infection.

Reflex Effects of Ear Disease Upon the Ocular Motor Apparatus.

URBANTSCHITSCH (*Wien. Klin. Wochenschr.*, I., January 2, 1896), has a most interesting article upon oculomotor reflexes proceeding from the organ of hearing. These generally show as nystagmus, seldom as spasm or paralysis or involvement of the intrinsic muscles. (1) Nystagmus may arise from irritation of the outer, middle and inner ear as well as from the auditory nerve or centers. It is more commonly met with as the oscillatory form and seldom as rotatory. In one case he had seen change from the former to the latter with an increase in the intratympanic irritation. He cites cases of nystagmus and vertigo caused by syringing, more especially with cool water; in one case its development could be favored by powerful turning of the eyes away from the affected ear; case of intra tympanal choleasteatoma upon removal of which temporary bilateral nystagmus and vertigo appeared, symptoms gradually grew better and on cure of the ear affection the nystagmus could no longer be elicited. Inflammation of middle ear and perforated drum head caused by insect in canal has been responsible for the ocular reflex. Temporary nystagmus has followed removal of polypus from middle ear. Hogyes has obtained marked nystagmus by withdrawing perilymph and blowing in air. In Cyon's experiments upon the semicircular canals in dogs, oscillatory movements of the eyes with turning to same side followed irritation of horizontal and anterior vertical semicircular canals. This ceased on severing of the acoustic nerve. Excitation of both nerves causes rolling of both eyes. Cutting of one nerve turns the eyes to one side and cutting of the other straightens them. Cases have been reported where certain notes have caused rolling of the eyes. Nystagmus is of reflex origin though occasionally induced by morbid conditions of the occipital lobes or by thrombosis of the sinuses. (2) Strabismus seldom occurs as an aural reflex. Lucca reported a case with perforated membrane where compression of the air in canal caused diplopia and abduction of eye to same side. The author had seen case of convergent strabismus existing during two years in which there was suppuration from one middle ear which almost disappeared after cure of the ear disease. The removal of a polypus from middle ear in a woman having exophoria caused permanent increase of divergence. (3) Moos

had seen paralysis of superior oblique following suppuration of tympanum. (4) Gellè records monocular disturbance of the pupil from irritation of outer or middle ear. He has seen temporary mydriasis follow operations, from aural inflammation and from rarification or condensation of air in the canal in cases of perforated drumhead.

Basedow's Disease and Tetany.

STEINLICHNER (*Wien. Klin. Wochenschr.*, I., January 2, 1896), reports a case of bi-lateral Basedow's disease and tetany co-existing in one individual. In a woman 20 years of age at 10 years the thyroid gland had enlarged, reaching the size of an egg, at which it remained without causing any symptoms until one year before admittance to the hospital, when without having fever or mental shock she complained of frequent cramps in the arm and hands, the latter assuming the characteristic position of tetany. She developed amenorrhea, sleeplessness, palpitation, exophthalmos, tremor in hands, which gradually grew worse. Although exophthalmos was present, the Graefe, Stellwag and Mobius symptoms were not found. The thyroid gland projected more than two inches, was uniformly enlarged, hard and elastic. A thrill could only be felt in isolated spots. The trachea was bi-laterally compressed so that at level of fourth ring it was reduced to a sagittal slit one-twelfth of an inch in diameter. The pulse was 144, heart hypertrophied and somewhat dilated. Frequent tetanic spasms of both arms occurred. The dyspnœa increased so rapidly that tracheotomy was done, after which septic broncho-pneumonia accompanied by diarrhea and vomiting occurred. Patient died about three weeks after the operation. At the autopsy she was found to have Basedow's disease with hypertrophy of the thyroid gland, exophthalmos, compression of the trachea by pressure of the struma, tracheo-bronchitis, lobar-pneumonia, atelectasis of the inferior lobes of the lung, acute gastritis and enteritis and acute hemorrhagic nephritis. In the cerebral cortex at the concavity of the right supra-marginal gyrus was a calcified cysticercus as large as a pea. No previous case of existence of both exophthalmic goiter and tetany was found in the literature. He has, however, recently seen two cases of the latter disease in association with cysticerci in the mesial convolutions. His view of the pathology of this case was that the struma was the primary affection and this led by auto-intoxication to the Basedow's disease. At the same time the circulation of toxic material evoked the tetanic symptoms.

Experimental Parenchymatous Keratitis.

BARRI. (*Wien. Klin. Wochenschr.*, I., January 2, 1896.) Inaugural dissertation in Basel, sought to destroy Descemet's membrane by injecting sublimat solution or chlorin water into the anterior chambers of dogs' eyes or by inserting a piece of glass in the cornea. By these means he produced swelling of the corneal fibers, thickening and lengthening of the corneal elements, following thickening of the endothelium, producing appearances similar to parenchymatous keratitis. He comes to the conclusion that parenchymatous keratitis in man arises from lesion of the endothelium, is characterized by swelling of this membrane and of the corneal elements. Wintersteiner criticises his conclusions, remarking that the clinical course of traumatic cases is not at all like that of idiopathic keratitis, such as occurs in syphilis, and it is not yet proven that there is lesion of Descemet's membrane.

Blepharochalasis (Relaxation of the Tarsal Skin.)

FUSCHS (*Wien. Klin. Wochenschr.*, VII., February 13, 1896) describes a type of disease characterized by great relaxation of the skin of the lids following swelling. The skin loses its elasticity following the changes and shows folds and wrinkles similar to those of old persons on the upper lids between the brows and eyelashes. It is an atrophy accompanied by relaxation of the intercellular tissue, occurring in young persons and those of middle age in both sexes, the earliest in the fourth year and follows an edema of the lids. In most cases there has been no apparent cause. There is dilitation of the fine veins of the skin, and it is sometimes accompanied by a light grade of ptosis. The condition can only be remedied by operation, the best being excision of a strip of skin from the lid. He has tried injection of tincture of iodin and of alcohol with no result.

Hydrophthalmos Congenitus Cured by Iridectomy.

BERGMEISTER. (*Münchener Med. Wochenschr.*, Wiener Briefe VIII, February 25, 1896.) At a meeting of the Wiener Aertzte Gesellschaft February 21, 1896, Bergmeister showed an interesting case of infantile glaucoma which had been cured by iridectomy thirteen years before, when the child was 6 months old. He strongly recommended iridectomy in such cases, as otherwise the eyes are lost.

ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OPHTHALMOLOGICAL LITERATURE.

By Charles H. May, M. D.,
of New York.

The Accidents of Lens Extraction.

Charles Bell Taylor, M. D., Nottingham. (*The Lancet*, January 18, 1896.)

"If in consequence of an extremely narrow chamber, mal-incidence of light, unruly conduct of the patient, or other accident, the point of the knife should pass into the pupillary area, and behind instead of in front of the distal portion of the iris, it must be withdrawn and freed before making the counterpuncture, and the section completed with the secondary knife or with the scissors.

"If, in consequence of the premature escape of the aqueous humor or delay in getting in front of the iris, it should obstinately fold over the edge of the blade, so that persistence on the part of the operator would inevitably entail mutilation, then the knife should be turned around so as to present the back of the blade to the protruding portion while the counter puncture is effected; but if there is no objection to a slight iridectomy the knife may be pushed on so as to slice off a small piece of iris, or, by manipulation outside the cornea, the coloboma may be limited to the periphery of that membrane, leaving the pupil untouched and free in the anterior chamber. Iridectomy accomplished in either of these ways is less painful, is less apt to provoke resistance on the part of the patient, and bleeding is less likely to occur than when the iris is withdrawn with forceps and snipped off with scissors in the usual way, This peripheral section of the iris, however accomplished, while preserving the

pupil, is an effectual preventative of prolapse, and was first suggested by myself with that object in a paper which I read before the International Ophthalmological Congress at the Royal College of Physicians of London when last held at London under the presidency of the late Prof. Donders.

"The wound for extraction should be peripheral, and the flap as large as consistent with safety. The lens starts easily with a large flap, and may on occasion be delivered with the capsule intact by manipulation with two spoons outside the cornea. The peripheral position of the incision sometimes entails a conjunctival flap which may bleed into the anterior chamber, and unless the blood is coaxed out before it coagulates will obscure the field of operation. Prof. Hansen Grut of Copenhagen fears that this blood may prove a source of infection, but if loose and exposed coagula are, as is essential, carefully removed, there is no such danger, and the sanguinious fluid between the lips of the incision will seal up the anterior chamber and prevent prolapse of the iris by insuring almost instant healing of the wound.

"If, as I have seen in cases of extreme myopia with semi-fluid vitreous, the vitreous should escape in quantity and the eyeball at once collapse, it is prudent in certain cases to limit the operation for the time to a slight iridectomy, extracting the lens later through a peripheral linear incision with the spoon.

"If, after completion of the section, from any accident the vitreous of normal consistence should gush forth and the lens sink behind the lower segment of the iris it should be instantly dipped out with the fenestrated loop which I use for this purpose, which is less rigid and more easily manipulated than the ordinary pattern, and which also possesses the unique advantage of assisting the exit of the lens without aiding to its bulk. If the capsule is too tough to permit of incision by the pricker it should be withdrawn whole with the forceps, leaving the iris intact, and the same procedure may be adopted at once after extrusion of the lens if it is evident that the capsule will interfere with subsequent vision.

"If the eye to be operated on is so sunken, or the brow so prominent, that it is difficult with the ordinary keratome to locate the incision with precision, it is well to use the knife with a deep elbow which has been made for me by Weiss for use in such cases.

"If one eye has been lost after extraction through a corneal incision the chances of salvation for the other will be greatly increased if the incision is limited to the sclera, as in Graefe's operation. It is well, also, in view of the injurious effect which sympathetic irritation may have upon the eye about to be operated upon, to excise the stump of the damaged organ some weeks before extracting on the other, or optico-ciliary neurotomy may be done, with equally good effect.

"I do not hesitate to extract immature cataracts which interfere with vision in persons past middle life, but I am always careful in such cases to facilitate the exit of the lens entire by a large flap, and to avoid as far as possible the subsequent formation of inflammatory products in the pupillary area by limiting the incision of the capsule, as recommended by Knapp, to the periphery only of that membrane.

"If there should be lachrymal obstruction or anything like conjunctival discharge or incrustation on the lids in cataractous subjects, it is most important that a healthy tone should be restored before operating. Pagenstecher destroys the lachrymal sac when there is purulent discharge, and Haab also recommends the obliteration of the puncta by the galvanic cautery. I have, however, found myself that probing (without slitting up the canaliculus) and the use of astringents and antiseptics, especially that most potent of all, nitrate of silver, are sufficient to enable us to extract with safety.

"When it is necessary to excise the iris for any reason during extraction without a general anesthetic, it may be rendered insensible in from one to two minutes by merely dropping a solution of cocaine on to the surface of the wound. Mr. Critchett, to whom we are indebted for the suggestion, conducts the solution into the anterior chamber by means of a grooved curette; but I have not found this necessary, and have always deprecated the injection of fluids into the anterior chamber.

"When, in spite of all efforts to extrude cortex, the pupil remains obstructed, gray and somber, the haloid fossa may on occasion be punctured, in which case the patient is much in the position of one whose lens and capsule have both been removed at one coup with a spoon.

"Of course the most serious drawback to simple extraction is the possible occurrence of prolapse of the iris; as Pagenstecher says: 'The operation is completed beautifully, and

just as beautifully next day you find that the iris is prolapsed.' This accident is caused by abnormal tension of the eyeball, by sudden outgushes of the aqueous humor, by faulty placement of the incision, by swelling up of the retained cortex and by spasm of the lids. Kalt, of Paris, endeavors to prevent prolapse by suturing the cornea, Galezowski by sealing the wound with an antiseptic wafer, Snellen, of Utrecht, by closing it with a conjunctival flap, and Knapp, of New York, by subjecting his patients to a series of tests immediately after extraction, performing iridectomy in those cases in which the iris shows a tendency to protrude. For my part I am satisfied if the edges of the wound are accurately in position, if the flap fits like a watch-glass and the pupil promptly contracts; in these cases the anterior chamber is reformed at once, there is no gushing of aqueous or prolapse of iris, and, barring accidents, there will be none. But accidents will happen: 'Against stupidity the gods themselves are powerless; hence we are compelled to reckon upon a certain percentage of cases in which prolapse will occur; and, of course, if prolapse were a very serious accident its possible occurrence would be a fatal objection to simple extraction, but it is not a very serious accident. The great majority of the subjects of prolapse are no worse off than if iridectomy had been performed in the first instance, while, if the operation succeeds, then, indeed, the surgeon has something like success—the success which leaves nothing to be desired, which has nothing to fear for the future, and which restores the patient to society, not only with excellent vision, but with eyes which show no trace of operative interference. I presented patients, the subjects of double extraction by this method, to the notice of members of the Clinical Society of London in 1875, to the Medical Society and to the staff at the Royal London Ophth. Hospital, and again to the members of the Ophth. Section at the jubilee meeting of the British Medical Association. Such eyes, according to my experience, bear the wear and tear of life much better than eyes operated upon by the combined method, and, of course, sight is better (one patient on whom I operated for senile cataract twenty-seven years ago is still alive and has excellent sight), and Helmhotz and Donders to the contrary notwithstanding, accommodation is not abolished. I have had patients able to read small print without glasses after extraction, and many more who can

do so by a slight change in the position of their distance glasses, and all trace of operative interference is so conspicuously absent that patients of mine who have afterwards consulted eminent ophthalmic surgeons have quite naturally escaped detection. Of course, in this operation there is only one wound; in extraction with iridectomy there are two; hence, in the latter case the traumatism and liability of infection are greater. Otto Becker's researches (post mortem) have shown that when iridectomy is done there is always prolapse at the angles of the wound, and the lens capsule, as Mr. Swanzy warns us, is very apt to be trapped in the wound with the combined operation, an accident which never happens with simple extraction. The central and movable pupil, too, of course fulfills its natural function of regulating and excluding rays of light much better than one that has been deprived of a portion of its sphincter, and, as in aphakial animals, compensates for the absence of the lens. If suppuration should threaten after extraction, internal antisepsis, after the method of Vopelius, should be at once adopted."

A Third Table of Ten Thousand Cataract Extractions.

F. M. Wilson, M. D., Bridgeport, Conn. (Trans. Am. Ophth. Soc. for 1895.) The writer has calculated the percentage of loss in 10,000 cataract extractions, the reports of which were published between the years 1879 and 1893. No attempt at selection was made. "So far as I am aware the conclusions of Dr. Noyes in 1879 that 6 per cent loss was a fair average for the surgical methods then in vogue has never been called seriously in question—*i. e.*, before antisepsis or asepsis was much practiced, and before cocain it was possible to collect 10,000 cases of cataract extraction, with an average loss of about 6 per cent.

"I have tried to reason away this deadly uniformity with the results of twenty years ago, but have been entirely unsuccessful. What Virchow calls the 'brute force' of such masses of cases is too great. From the well-known facts of general surgery we can only infer that antisepsis or asepsis must be important in cataract extraction. Laboratory experiments upon animals seem to show the same thing. From my own clinical experience I have come to regard aseptic precautions in cataract extraction as of the highest importance. But I see no escape

from the fact that the average loss *was* about 6 per cent in 1879 and *is* about 6 per cent now.

Observations on Cocain Anesthesia.

J. JACKSON CLARKE, F. R. C. S., England. (*The Lancet*, January 18, 1896.) The writer gives a number of very useful hints concerning the best method of using cocain as a local anesthic, which though not new, are often disregarded. Though dealing with the question from the standpoint of the general surgeon, his paper is equally instructive to the ophthalmic surgeon. He is prompted to give his experience because he has used cocain very extensively, because he is convinced that in many cases the solutions, whether used for superficial application or for hyperdermic injection, are insufficiently diluted, and finally, because recent improvements in the composition of solutions for hyperdermic use have been suggested.

"*The scope of the method:* As examples of the kind of operations to which my observations relate I may mention the removal of cutaneous tumors, such as rodent ulcers and sebaceous cysts of the scalp, circumcision; the excision of tuberculous glands when free from deep adhesions, etc. * * * The more serious operations are, in my opinion, unsuited to the method on account of unforeseen difficulties and complications which may arise and demand prompt and energetic measures, but in exceptional cases and emergencies—*e. g.*, tracheotomy, cocain may be used. * * * * * * * *

"*Idiosyncrasy:* The smallest hyperdermic dose which I have observed to produce faintness and nausea was one-tenth of a grain; this was in the case of a man 65 years of age. I have found that old people are especially susceptible, and it is advisable in every case to have brandy and amyl nitrit at hand. Probably, as is the case with chloroform, degeneration of the heart is the condition most to be feared. The application of cocain to mucous surfaces has given rise to fatal accidents. It must, however, be borne in mind that many cases attributed to idiosyncrasy have been due to the use of injudiciously strong solutions, or to the injection of the drug directly into veins. With proper care even in regions rich in veins, such as the lower part of the rectum, the method may be safely practiced; thus Ricard has operated for hemorrhoids after producing anesthesia by a 1 per cent solution, the needle being plunged deeply into

the tissues and gradually withdrawn as the injection was made.

"*Strength of solutions:* For some years I have employed a 1 per cent solution of hyperdermic injection and a 2 per cent solution for mucous surfaces, but latterly, influenced by the experience of Schleich, I have diminished the strength of the hyperdermic injections. Schleich recommends a solution made up of cocain hydrochlorat and sodium chlorid, of each 3 grains; morphia hydrochlorid, one-third of a grain; distilled water to 3 ounces—equivalent to a 0.25 per cent solution. The sodium chlorid was added, since it was found to diminish the pain caused by the injection. Bransford Lewis reports that, using this solution, he has found it possible to anesthetize the corium, but in the deeper tissues the anesthesia was not perfect. This has been my own experience, and latterly I have used a $^1/_2$ per cent solution in removing a rodent ulcer of the nose and in other minor operations with complete satisfaction. It is impossible to keep weak solutions for any length of time without fungi appearing in them; therefore, it is preferable to make the solution fresh from the solid drug for each operation. For this purpose Messrs. Allen and Hanburys have kindly made for me pellets, each containing 1 grain of cocain hydroclorat and $^1/_2$ grain of common salt. One such pellet dissolved in 3 drams of boiling water gives a sterile $^1/_2$ per cent solution, which is cooled by placing the vessel in cold water or on ice. Tested on myself it produced in one minute complete anesthesia, which lasted exactly a quarter of an hour. When the elastic band was used the anesthesia was complete for twenty minutes, and after the band was removed at the end of this time the anesthesia lasted ten minutes longer.

"*The method of making the injections:* When injections are made for the purpose of anesthetizing the skin, the corium should first be filled with the solution. This is accomplished by using a very fine needle and introducing it almost parallel with the skin. A few drops are injected causing a slight wheal to appear, and after a few seconds the needle is pushed further, and the process is repeated until the whole corium is infiltrated. The subcutaneous and deeper tissues are to be treated in a similar manner. This method has been described in detail by Schleich, but it has been used by many surgeons, including myself, for years. The merit of showing the anesthetic effect of solutions injected into tissues so as to cause pressure on the

nerves, and the suggestion of making the addition of common salt to solutions of cocain, apparently belong to Schleich. There is, however, a limit to the desirable degree of infiltration. If the wheal produced by the entry of the fluid into the tissues is very tense the parts remain tender and the skin red for over twenty-four hours.

"*Other details:* It need hardly be mentioned that perfect antiseptic precautions should be observed, yet some cases have come to my notice in which subcutaneous abscesses, etc., have followed the hyperdermic injection of cocain. These have been due to the lack of simple precautions. An ideal syringe should be capable of being placed in boiling water with the other instruments, and at the same time should be as perfect as a hydraulic machine. The syringe which I have used for some years without any mishap answers the second, but not the first of these requirements, By using it solely for the one purpose, and by cleansing with a 5 per cent carbolic solution before and after each operation, it has been kept aseptic. It is also kept in an air-tight metal case, which keeps the piston moist. * * * A perfect syringe has, I think, yet to be found.

"*Substitutes for cocain:* Lucas Championnière has recently suggested guaiacol dissolved in olive oil as a substitute for cocain. I have tried on myself a solution of 30 grains in one ounce of olive oil, and find it produces anesthesia, but causes considerable swelling; and, whilst in the central part of the swelling there is anesthesia, there is much smarting at the peripheral part of the area into which the fluid has been injected. The smarting lasts much longer than the anesthesia. I am not, therefore, inclined to try this drug on patients."

The Bacteriology of the Different Varieties of Acute Conjunctivitis in General, and of Acute Contagious Conjunctivitis in Particular.

Victor Morax, M. D., and George William Beach, M. D., of Paris. (*Archives Ophth.*, January, 1896. The authors adopt an etiological classification of the different varieties of acute conjunctivitis. "The bacteriological study of acute conjunctivitis is far from being completed, but it is already possible to establish a certain number of well defined forms. This affection does not result from the development of no mat-

ter what microbe." * * * "Thus, in practice, and with the exception of diphtheritic conjunctivitis, the microscopical examination can of itself establish the etiological nature of the affection. The possibility of an accurate diagnosis by so easy a method cannot fail to be considered of the greatest importance. It is our conviction that in many cases it is necessary to resort to a microscopical examination, and that especially when the practice of medicine means something more than mere pecuniary benefit."

The writers then review "what has been absolutely acquired in the bacteriology of different forms of acute conjunctivitis" as follows:

"*Acute Contagious Conjunctivitis:* This is one of the most common forms. It is also called acute conjunctivitis, contagious ophthalmia, catarrhal conjunctivitis, "pink eye." It invariably coincides with the presence of a small specific bacillus, discovered by Koch in the acute conjunctivitis of Egypt, described by Weeks in America, and studied by ourselves in the acute conjunctivitis of Europe. It must not be confounded with the catarrh which accompanies a great number of lesions of the conjunctiva, cornea, and eyelids, and which does not constitute a distinct contagious affection.

"*Gonorrhoic Conjunctivitis:* This includes every form in which the pathogenic agent is the gonococcus (infantile ophthalmia, leucorrheal conjunctivitis of little girls suffering from vulvo-vaginitis, purulent conjunctivitis of adults). In all these forms the discharge contains great numbers of gonococci and in almost a pure state. This is easily shown either by a microscopical examination or in special methods of culture favorable to the development of this micro-organism. The microscopical examination is practically sufficient for making a diagnosis. But besides the gonorrhoic conjunctivitis by inoculation, there is to be seen. and especially in adults, a form which may coexist or not with gonorrhoic arthritis. This spontaneous variety without inoculation has a profuse discharge, and in many cases the gonococcus is not to be found; nevertheless it is not unusual to find it in the secretion of very severe cases.

"*Diphtheritic Conjunctivitis:* It is characterized by the presence of the diphtheritic bacillus. The detection of this micro-organism under the microscope in cultures is the only sure way of distinguishing this affection from forms with pseudo-

membranes which are caused by other bacilli. The researches of Sourdille, Uhthoff, Elschnig, and our own show that diphtheritic conjunctivitis may have a benign or, on the other hand, a serious aspect. This form alone is affected by anti-diptheritic serum, which has no influence upon a pseudo-membranous conjunctivitis of any other origin. The bacillus of Klebs is easily found under the microscope in the pseudo-membrane. It is often in a pure state, but frequently is found with a few streptococci, and sometimes with intra-cellullar cocci. It is easily recognized from its irregular form and its staining by Gram's method.

"*Pseudo-membranous Conjunctivitis of Streptococcic Origin:* This form is especially seen in children during the declining period of measles and scarlet fever, also, sometimes, independently of any febrile affection. It may accompany impetigo lesions of the face. The evolution of this conjunctivitis is sometimes extremely rapid and the lesions of the cornea that complicate it are particularly serious. For this reason it is more to be feared than diphtheritic conjunctivitis, with which it has long been confused. The conjunctival secretion contains little else than the streptococcus. Microscopical examination and cultures on coagulated serum show the absence of diphtheritic bacilli.

Lachrymal Conjunctivitis of Streptococcic Origin: This affection has been described by Parinaud. It comprises those cases of acute conjunctivitis which accompany the inflammatory periods in strictures of the lachrymal ducts, in pericystitis for example. This form of conjunctivitis, though without apparent lesions of the cornea, may be complicated with hypopyon and iridocyclitis. The scanty conjunctival discharge ordinarily contains a few chains of streptococci.

Conjuctivitis of pneumococcic origin: This is an affection of early childhood, always of a benign character, and usually accompanied with coryza and watery eyes. The scanty mucopurulent discharge, examined under the microscope or in cultures, discloses the presence of encapsulated pneumoccoci.

By the side of these well-defined clinical forms are many others whose bacteriological and clinical study has not been made. Such are for example, infectious conjunctivitis, (Parinaud), etc.

A Clinical and Experimental Study of the So-Called Oyster-Shuckers' Keritits.

ROBERT L. RANDOLPH, M. D., Baltimore, Md. (*Johns Hopkins Hospital Bulletin*, November, 1895.) From a careful clinical and experimental study of this disease the writer has arrived at the following conclusions:

"1. Oyster-shuckers' kerititis may be defind as a traumatic keratitis where the injury is produced by a particle of the oyster shell.

"2. The disease is chiefly remarkable for the rapidity with which the cornea undergoes necrosis at the site of the injury, this area of necrosis being usually very small, owing, no doubt, to the small size of the foreign body. Small foreign bodies of copper, steel and sand usually produce no appreciable keratitis; and even when they lodge on the cornea commonly require several days before they produce noticeable inflammation. On the other hand, the oyster-shucker usually presents a marked infiltration of the cornea at the point of injury within twenty-four hours after the accident.

"3. This decided reaction on the part of the cornea makes the injury a peculiarly dangerous one when a large area is wounded, or when entrance has been made into the anterior chamber, such conditions in my experience being invariably followed by the loss of the eye through panophthalmitis. How often do we see the cornea injured in the same degree by other foreign bodies and still the vision not entirely destroyed.

"4. Bacteriological investigations failed to discover any specific organism, nor did any of the organisms obtained from cases of oyster-shuckers' keratitis manifest any pathogenic properties when introduced into the cornea of rabbits, with the exception of the pyogenic cocci. It is not likely then that the disease is of parasitic origin.

"5. The carbonate of lime, of which the oyster-shell is almost entirely composed, was found to possess qualities irritating enough to call forth a keratitis when introduced into the cornea of a rabbit, and it is more than probable that several other chemical ingredients of the shell would be more or less irritating to the cornea.

"6. It is certain that bacteria always play a part in traumatic keratitis, but it is evident that in this variety of keratitis the cornea is rendered especially susceptible to the effect of

micro-organisms by the irritating chemical ingredients of the oyster-shell, notably the carbonate of lime."

The Excretory Origin of Certain Forms of Iritis and Cyclitis.

SYDNEY STEPHENSON, M. B., F. R. C. S., Edin. (*The Lancet*, February 29, 1896.) "The practical surgeon knows that most cases of iritis and cyclitis are associated with definite constitutional disorders, such as syphilis, rheumatism, gonorrhea or tuberculosis. Whilst this fact is universally admitted, few writers appear to have allowed themselves to speculate as to the why and wherefore of the connection." The writer makes an attempt to bridge this gap by examining the "excretory theory" recently brought forward by Dr. David Walsh to account for the origin of certain forms of dermatitis and applying it to the eye.

"The main facts of this 'excretory theory' may be thus briefly set forth. Walsh believes that certain inflammatory affections of the skin are due in the first place to local changes set up by the excretion of irritating substances circulating in the blood. In this way he endeavors to account for the eruptions set up in the exenthems, in gout, rheumatism, syphilis and other constitutional disorders, and for the rashes which now and then follow the employment of such drugs as iodin, bromin, capaiba, anti-toxin and tuberculin. According to him this hypothesis is supported by many facts." After giving numerous examples "he suggests that these various eruptions take their starting point from the acute or chronic excretory irritation of the skin. Lastly, it must be clearly understood that the irritant may be either in the shape of specific organisms or their products, of drugs, or of the chemical products of faulty tissue changes."

"For the purposes of argument a first step will be to inquire whether we are justified in regarding the ciliary body as a secretory apparatus." He cites a number of authoritative views of the function of the ciliary body and then demonstrates that the iris and ciliary body are anatomically continuous and may be looked upon as constituting a single structure.

"Syphilis is the commonest cause of irido-cyclitis. Most writers credit the venereal complaint with 50 per cent of all cases. That estimate, however, is too low, especially if the hereditary cases be taken into account. The proportion probably lies nearer 60 per cent. Rheumatism or gonorrhea is responsi-

ble for most of the other cases, and we shall not be far wrong if we lay 30 per cent to the score of those ailments. The remaining 10 per cent is due to various causes, of which tubercle, gout, malarial and other fevers are among the more important. We are not concerned in this place with traumatic or sympathetic inflammation. In glancing over the foregoing list one can scarcely fail to notice that almost all the ailments named are intimately associated with, if not actually caused by, micro-organisms."

The succeeding portion of the paper is given to substantiate the statement just made. "Two propositions then seem to be clear—first, that most inflammatory affections of the ciliary body and iris are dependent upon a constitutional ailment; and, secondly, that a majority of those ailments are of a bacterial origin. The conclusion follows that most forms of irido-cyclitis result from the action of micro-organisms."

The writer then presents considerable material to show that the immediate cause of these inflammations is to be sought in the vicarious glandular excretion of microbes or their products circulating in the blood or other nutriment fluids of the body.

His conclusions are: "(1) Most inflammatory affections of the iris and ciliary body are the outcome of constitutional ailments, which are in turn due to microbic infection. (2) In certain forms of irido-cyclitis specific micro-organisms have been found in the contents of the anterior chamber. (3) There exist good grounds for believing the proximate cause of all cases of endogenous irido-cyclitis to be the excretion by the ciliary body of micro-organisms or their products. (4) Therefore, bacteriological examination of the aqueous humor might furnish a ready means of detecting an organism in those maladies thought to be of infectious nature, such as rheumatism. It might also lead to a correct conclusion as to the cause of doubtful cases of irido-cyclitis."

Salicylate of Soda in Glaucoma.

Dr. T. Y. Sutphen, Newark, N. J. (Trans. Am. Ophthalm. Soc. for 1895.) The writer reports a number of cases in which the use of salicylate of sodium controlled the pain of glaucoma in a very successful manner; none of these patients gave a rheumatic history. "In looking over the literature bearing upon the treatment of glaucoma, I can find but very little

mention made of the usefulness of the salicylates, even where there was a possibility of a rheumatic diathesis existing, except as the recommendation was made that any general indication met with should be taken into consideration and treated accordingly. Several years ago when in charge of a case where the patient was suffering great pain in an attack of glaucoma, all other means of relief having failed, I was led to prescribe the salicylate of soda. Much to my surprise and joy, the remedy acted with the greatest promptness, the patient being quickly relieved, and the acute symptoms subsiding rapidly. The eye, though blind, was saved from enucleation. From that time on I have used this remedy with the utmost satisfaction, believing it to be almost a specific for the relief of the severe pain so constant in secondary glaucoma, with or wtthout an apparent rheumatic diathesis, and also in cases where there is more or less supra-orbital neuralgia when the condition of the glaucomatous eye does not demand surgical interference."

Dacryocystitis.

RICHARD TAYLOR, M. D., Louisville, Ky. (*Journal of the Am. Med. Assoc.*, January 4, 1896.) In the treatment of dacryocystitis, the writer believes the use of a lachrymal tube to be the only radical method of treatment. He splits the punctum and then cuts the stricture with a probe-pointed bistoury or a spear-pointed knife with a malleable shank. Lately he has been using a double-edged Graefe's knife, cutting the stricture in several places by turning the knife. Then the tract is cleansed with an antiseptic solution and the lachrymal tube inserted.

"All lachrymal tubes are made on the same general plan, but the one which I have devised is somewhat different. It meets the requirements more fully than any I have yet used. This tube is seven-eighths of an inch long and three-eighths inch angle, and can be made of any size and of any metal. It differs from all others in having a lateral slit on each side of the short end, leaving a duck bill spout with upper and lower blades, both of which are to be beneath the surface of the lids or entirely in the passage and hidden to view. In this way the slit prevents the soft tissues from closing the opening of the tube or hindering the passage of the tears through the tube. It can be worn indefinitely. If the stricture should not be absorbed, or if the dilatation with probes is deemed necessary,

they can be easily passed down by the side of the tube. I have nine of these tubes now in use. One of these has been worn for over two years without the slightest annoyance, without the knowledge of the patient's office associates, and also without recurrence of the trouble."

Formic Aldehyde in Ophthalmic Practice.

James Mackenzie Davidson, M. B., C. M., Aberdeen. (*British Med. Journal*, January 18, 1896.) The writer cites a number of cases in which corneal abrasions and ulcers, in two instances with hypopyon, were treated with a solution of formalin 1:2000 or 3000 with most favorable results.

"The results which I have obtained with this substance in the treatment of some diseases of the eye have been so notable that I am induced to publish this short article upon its use. The preparation I am using is Shering's formalin (which consists of 40 per cent formic aldehyde in water forming a stable solution if kept in a well-stopped bottle.) One part of formalin in 2000 or 3000 of water is the strength which I find most serviceable. When I tried it first in hypopyon ulcers it was dropped into the affected eye three or four times daily, and it seemed to be of very little use; but on applying it freely every hour, I have never seen anything act so effectually in these cases."

"The usual antiseptic applications so often fail to benefit such injuries, that recourse has to be had to the electric cautery; and if this is to be thoroughly effectual the focus must be burned out completely, and consequently more or less of sound corneal tissue is destroyed as well; and, while the scar left is frequently wonderfully slight, still no one can doubt that if the process can be at once arrested by local antiseptic applications, the results are even better. My experience warrants me in claiming that in a solution of formalin, 1:2000 or 1:3000, applied freely every hour, we have such a substance. Used in the same way or less frequently as experience may dictate, it acts admirably in abrasions of the cornea, which have become septic and infiltrated, and might or might not go on to suppuration. Another great advantage is that the severe pain so characteristic of hypopyon ulcer is speedily relieved by the formalin solution, which further, is non-poisonous and produces no irritation on the strength recommended. The directions I give to the patient are to lie down, and then with a dropper, or failing

that, a teaspoon, the formalin solution is poured gradually into the eye, while the eyelids are kept winking, so that its surface will be freely bathed. This is done hourly during the day and at night also should the patient happen to awake. * * * * * * Atropin is only used sufficiently to keep the pupils dilated in these cases. Since using formalin in this way I have not had to use the electric cautery once."

Hysteric Blindness and Pseudo-Meningitis, With Report of a Case Treated by Hypnotism.

HUGH T. PATRICK, M. D., Chicago. (*Journal of the American Medical Association*, February 8, 1896.) The writer gives a detailed history of a case of hysteric blindness and pseudo-meningitis; the patient was a woman 30 years of age; hypnotism and suggestion were used and caused a rapid disappearance of the blindness. Concerning the diagnosis of hysteric blindness the writer says:

"Hysteric amblyopia with contracted field and dyschromatopsia is common, monocular amaurosis is less common and hysteric total blindness is rare. * * * The diagnosis of hysteric blindness is usually not difficult if the physician simply bears in mind the possibility of its occurrence and have a fair knowledge of the symptomatology of hysteria. What may be called the negative symptoms are first to be considered. The pupils are ordinarily normal, the fundi oculi are normal, as are also the cranial nerves; the corneal and lachrymal reflexes are present and the interrupted galvanic current causes flashes of light as in the normal eye; but it must not be forgotton that exceptions have been noted to all these rules. * * * Hysteric strabismus, ptosis, facial paralysis and deviation of the tongue have been obsrved and there is nothing to exclude the possibility of any one of these complicating hysteric blindness."

"In making the diagnosis it is to be remembered that a lesion of the brain may cause total blindness with normal pupils and fundi if the focus of disease be bilateral, situated posterior to the corpora quadrigemina, and large enough to destroy the visual centers or cut the optic radiations on both sides; but a lesion of such magnitude, whether due to hemorrhage, softening, inflammation, abscess or a new growth would cause other and marked concomitant symptoms, and therefore another negative symptom of hysteric amaurosis would be the absence of other

signs of such a lesion. The positive symptoms to be considsidered would be those of hysteria, but I shall stop at the barest mention of the principal ones. Anesthesia, hyperesthesia, monoplegia, hemiplegia, paraplegia, contracture, tremor, chorea, stuttering and other affections of speech, disturbance of the special senses, convulsions and the general mental state, any of these bearing the characteristics known to belong to hysteria; vaso-motor phenomena, loss of pharyngeal reflex, and especially anesthesia of the conjunctiva and eyelids are to be mentioned and always sought for."

"The mode of onset might be of diagnostic worth; blindness coming on suddenly after great psychic disturbance or gradually as a concentric and increasing contraction of the field of vision with dyschromatopsia, or following an etiological factor sufficient for auto-suggestion, but inadequate to produce blindness otherwise, as a slight traumatism, atropin dropped into the eye or association with a blind person, would indicate the hysteric nature of the affection. But hysteric amaurosis may come on without ascertaining cause (possibly during the night) in a person who has never shown any signs of hysteria and who is found to bear none of the stigmata; that is, the cause may be an example of primary, or initial, mono-symptomatic hysteria. We must then depend entirely upon the negative signs, and it is particularly in these cases that hypnotism may come to our aid in diagnosis as in treatment."

"Hysteric blindness is to be differentiated from that of exhaustion or anemia, and if it follows an injury, especially in the vicinity of the eye, with profuse hemorrhage, the diagnosis might at first be difficult. Neither is the hysteric affection to be confused with the blindness of ophthalmic migraine, that is, migraine with marked disturbances of vision. These consist ordinarily of scintillating or central scotoma, amblyopia or hemianopia, not infrequently accompanied by disturbances of speech. There may also be visual hallucinations or transient blindness."

"There is another psychic blindness that is to be distinguished from the hysteric, although the lines of division may blend in individual cases. This I am tempted to call the blindness of insanity and is simply a delusion entirely comparable to the ordinary delusions of the psychoses. These cases again shade off into those of photophobia, blepharospasm, etc., in which the patient fears the light, can scarcely open the eyes, may believe that he is blind, but can see if he can be made to look."

ABSTRACTS FROM RECENT FRENCH AND ITALIAN OPHTHALMIC LITERATURE.

By Casey A. Wood, M. D.

A Critical Study of Reid's Portable Ophthalmometer—Notes on Reid's Ophthalmometer by the Editor—Clinical Contributions to the Treatment of Glaucoma by Incision of the Parts at the Iridic Angle—Clinical Observations on the Surgical Treatment of Strabismus—Tetanus Following Enucleation of the Eye—Dislocation of the Lens into the Anterior Chamber and its Reduction by Massage.

A Critical Study of Reid's Portable Ophthalmometer.

The writer[1] has had many opportunities not only of using Reid's ophthalmometer, but of comparing it with the instruments of Helmholtz, Javal-Schiötz and Leroy-Dubois. These investigations have led him to the following conclusions:

1. With Reid's instrument one can eliminate the error, common to all the other instruments, arising from the fact that during the examination the visual line does not always coincide with the central point of the ophthalmometer. The nearer the observer approaches the eyes the easier it is for him to make his observations through the exact center.

2. A marked decentration of the cornea (as seen with Placido's disk), which is not readily detected while using the Javal-Schiötz instrument, is at once noticed with the Reid ophthalmometer, the eccentric corneal area appearing to be round with the former and oval or ovoid with the latter. On account of the greater distinctness of the corneal images in the Reid instrument one can more quickly detect the asymmetry associated with irregular astigmatism and keratoconus.

[1] G. Lucciola. Studio critico sul' oftalmometro di Reid. *Supplemento al Fasc. 4 Annali di Ottalmologia.* Anno XXIV., p. 34.

3. It is the certainty and precision with which one can recognize the instant of contact of the disc images in the Reid instrument that contributes so much to the accuracy of its measurements. In the Javal-Schiötz and Leroy-Dubois ophthalmometers an exact and distinct image-contact of the borders of the mires is not always possible, owing to chromatic aberration. This difficulty is increased by the fact that only about 2 per cent of the light that falls upon the corneal surface is reflected from it and any movement (*sdoppiamento*) mars still further the distinctness of each image.

4. It has been shown that the results obtained by the Javal-Schiötz instrument, as tested by subsequent subjective examinations, are accurate in the following proportions: In slight degrees of astigmatism according to the rule the ophthalmometer usually indicates from 0.25 to 0.50 D more than the atropinized eye will accept; in the higher grades it may show from 0.50 to 1.0 D less than that found by the subjective examination. In those cases against the rule it is usually from 0.25 to 0.75 too low—a very important fact, inasmuch as that even when the instrument detects no corneal irregularity there may really be present from 0.25 to 0.50 of oblique astigmatism.

Comparing, in the same manner, the readings obtained by the four ophthalmometers, Reid's instrument showed by a small fraction, a smaller error than the Javal-Schiötz. The ophthalmometers of Helmholtz and Leroy-Dubois were less accurate, each giving about the same results but differing, usually about 0.50 D, sometimes more sometimes less, from the Javal-Schiötz instrument.

5. To sum up, the most precise measurements were obtained by the Reid and Javal-Schiötz ophthalmometers. When the variations of these two amounted to 0.25 D, the error of the other two was somewhat more.

6. An important fact connected with the Reid instrument is that it can be used while the patient is lying down or, indeed, when placed in any ordinary position.

In conclusion, the Reid instrument, in consequence of its small size, portability, the precision of its measurements, the invariability of its results, and on account of the fact that its usefulness and efficiency do not depend upon a changeable source of (day) light, constitutes a most desirable addition to our list of ophthalmometric instruments.

Notes on Reid's Ophthalmometer.

Through the kindness of Dr. Reid himself I am able to append a copy of his original communication[2] to the Royal Society.

Dr. Russell Murdoch, of Baltimore, who, so far as I am aware, has had more experience of the ophthalmometer than any other American ophthalmologist, has been good enough to write to me in answer to some inquiries: "My approval of Reid's ophthalmometer is unqualified. It is, I believe, more scientific and of easier application than the Javal-Schiötz instrument. While measuring with accuracy the astigmatism it at the same time will, with an easily worked and simple formula, give the radii of the two different corneal meridia. Its weak point, in my hands, but not in Dr. Reid's, is the difficulty encountered in determining the exact angle of an axis against the rule. The two images that one looks at are circles, and I find it difficult to tell when they first separate or when they reach the furthest point of separation. Its use is not fatiguing, and when one get accustomed to handling it the work becomes very expeditious. Besides indicating corneal astigmatism it showed, in one case, a small amount of conical cornea, and I have thought, for some time past, that it indicates changes of corneal curvature during the act of accommodation."

Dr. Murdoch has found the instrument of particular value during his investigation of refraction in the eyes of the lower animals.

The inventor's original description of his instrument is as follows: "The object of the instrument about to be described is to measure the curvature of the central area of the cornea, the polar or optical zone; or of any spherical reflecting surface of from 6 to 10 *mm.* of radius. In its present form the instrument can only be applied to the measurement of the corneal surface in the visual line. As this is the area of the cornea utilized for distinct vision, this instrument furnishes all the data practically requisite for the diagnosis and measurement of corneal astigmatism.

"The theory of its construction is based on a particular application of the following well-known optical law: That when two centered optical systems are so combined that their princi-

[2]On a Portable Ophthalmometer. By Thomas Reid, M. D. (Proceedings of the Royal Society, February 16, 1893.)

pal foci coincide, the ratio of the size of the object to the size of the image formed by the combined systems is equal to the ratio of the principal foci of the two optical systems, adjacent respectively to object and image. The two optical systems in this case are the convex lens of the instrument and the cornea as a reflecting surface, with the object in the principal focus of the adjoining optical system.

Thus:—(*vide* Fig. 1.)

Let MM′ be the convex lens of known focus, A the corneal surface and P′ the point where their principal foci coincide.

Let SP be an object situated at the principal focal distance of MM′, and let XX′ be the principal axis of the system.

Then a ray SM parallel to the axis will, after refraction, be directed to the principal focus P′ of the curved surface of the cornea, and therefore be reflected in the direction IB parallel to the axis XX′. IB prolonged will meet the ray directed to the center C at the point S′; therefore S′ is the image of S, and S′P′ the image of SP, and S′P′ is in the principal focus of the convex reflecting surface.

In the similar triangles MP′O and IP′A,

$$\frac{P'O}{P'A} = \frac{MO}{IA'}$$

SM and IS′, the prolongation of the reflected ray, are parallel to the axis XX′,

therefore $SP = MO$ and $S'P' = IA$.

Therefore $$\frac{P'O}{P'A} = \frac{SP}{S'P'} \text{ or } \frac{O}{I} = \frac{F}{f}$$

$$f = \frac{r}{2};$$

therefore $$\frac{O}{I} = \frac{2F}{r} \quad \text{.....} \quad (I);$$

therefore $$r = \frac{2F \times I}{O}.$$

Description of the Instrument.—The essential parts of the instrument are an aplanatic convex lens of known focus, a rectangular prism neutralized in its center by a smaller prism,

one side of the rectangular prism being adjacent to the lens and a circular or other disc being opposite the other side in the principal focus of the lens. When the instrument is held in front of the convex reflecting surface with the disc turned towards a luminous source, a virtual image of the disc will be formed at the virtual focus of the convex reflecting surface. This image will only be seen distinctly by the emmetropic eye through the neutralized portion of the prism, when the focus of the lens in front coincides with the virtual focus of the convex surface. The ratio of the object to the image will be as shown above. If now a double-image prism be inserted behind the neutraliz-

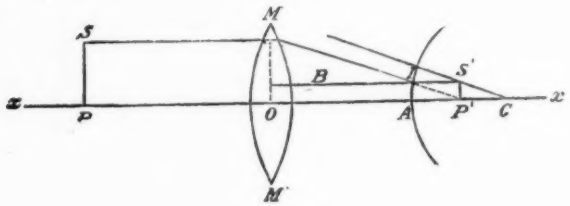

FIG. 1.

ing prism, which exactly doubles this image, its power with the combination is easily determined, and therefore the exact size of the image can be measured. The size of the object being known, we have the three elements necessary for determining the fourth proportional, the curvature of the convex reflecting surface.

The instrument in this simple form presented a number of practical difficulties in its manipulation, which were overcome by the introduction of a short telescope behind, with double-image prism fixed in front of its object-glass.

In its present form the instrument consists of the following parts (*vide* fig. 2[3]):—An aplanatic lens O*b*, a rectangular prism P neutralized in the visual axis by a smaller prism, P^2 and a telescope, with the double-image prism BP fixed in front of the object-glass of the telescope Ob^2. The focal length of the object-glass Ob^2 is precisely the same as that of the aplanatic lens O*b*, and cross wires CW at its principal focus are viewed by a Ramsden eye-piece.

[3]The object-glass has been specially constructed according to the formula of Professor Abbé, and contains barium glass as one of its constituents.

Before using the instrument it is necessary and sufficient that the cross wires should be distinctly seen at the punctum remotum of the observer. The adjusted instrument is held in the observer's left hand, which rests on the forehead of the patient, the disc being directed to a luminous source to the right of the

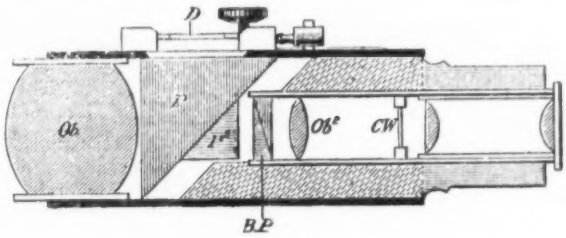

FIG. 2.

observer. The point of coincidence of the principal foci is found by moving the instrument to and fro. When the observed eye is directed to the central or fixation point and his visual line is vertical to the point of the cornea through which it passes, the corneal image doubled and inverted ought to be seen in the center of the field. Instead of using circular discs of different dimensions, the size of image required to produce exact contact in any meridian is conveniently and quickly obtained by making the required change in the size of a carefully constructed iris diaphragm. By using a circular object, the circular, elliptical, or irregular form of the image reveals at once the condition of the surface. When the image is elliptical, the meridian of greatest curvature is easily found by rotation of the telescope, and a rotation of 180° gives a controlling observation. By a similar process the meridian of least curvature is determined.

GRADUATION OF THE INSTRUMENT.—Let D be the power in dioptres of the cornea as a refracting surface, with a medium behind it of uniform density having an index of refraction $n = 1.337$ approximately.

$$D = \frac{(n-1)1000}{r}$$

$$= \frac{337}{r} \qquad \text{(II)}.$$

Combining equation (I) with (II),

$$D = \frac{337 \times O}{2IF},$$

$$D + 1 = \frac{337 \times O'}{2IF},$$

$$1 = \frac{337}{2IF}(O'-O).$$

In the present instrument I = 2, and 2F = 52,

therefore $1 = 3.24\ (O'-O)$,

$$\frac{1}{3.24} = O'-O;$$

therefore 1D = rather less than $\frac{1}{3}$ *mm.*

The index is divided into two parts, outer and inner. The outer registers the size of the image, and the inner the corresponding dioptres.

The degree of refinement with which the measurements may be carried out depends entirely on the degree of exactness of determination of the constants, especially I and F. I has been determined exactly to 1/500th inch, and can be estimated to about 1/1000th. The focal length of the oject-glass can be determined by Cornu's method, but in general it is more convenient to measure two curved surfaces whose radii are exactly known, and within the limits of the instrument.

The index error is found by taking the number of dioptres at sufficiently great intervals within the limits of the instrument. In this instrument, if we take the extremes of the index, o = 12 *mm.* and o = 16 *mm.*, we find the corresponding dioptres are 38.9 D and 51.84 D. The index being graduated in thirds of a millimeter, the index error of each division is nearly 0.08 D, which is positive.

If the double prism be now removed, the image being single, and the pupillary opening generally distinctly visible, it affords a means of determining whether the visual axis passes through the center of the pupil.

It will be seen that this instrument differs from the ophthalmometer of Helmholtz, the most perfect instrument theoretically and practically which has been devised for this purpose, in which, while the object is constant, the image varies with the curvature of the surface, but always covers the same angular interval of the surface. It resembles the *ophthalmomètre pratique* of Javal and Schiötz, in which the doubling is effected by means of a double-image prism inserted between two achromatic lenses of equal focus, so that while the image is constant the object is made to vary. With this instrument, when the difference of curvature of the principal meridians is considerable, amounting to 3 or 4 dioptres, in order to obtain approximately accurate results it is necessary to insert birefractive prisms of different powers, giving images of from 1 to 3 *mm.* In the present instrument the image of 2 *mm.* has been selected as giving sufficiently accurate results for most practical purposes, measuring with precision, as it does, a difference of refraction of half a dioptre. For cases outside the limits already referred to (6 to 10 *mm.*) prisms of suitable powers can be substituted.

The instrument may be had of Mr. W. Hassard, optician, 209 Sauchiehall Street, Glasgow, Scotland, and its cost, in that city, is about $50. C. A. W.

Clinical Contributions to the Treatment of Glaucoma by Incision of the Parts at the Iridic Angle.

Sgrosso[4] has operated upon fifteen cases of simple chronic glaucoma with results sufficiently favorable to enable him to recommend the operative treatment above indicated. He illustrates his text with charts of the visual fields (a few of which are here reproduced) before and after operation, and gives the vision in each instance. His observations of the cases extended over several months and longer.

[4]P. Sgrosso. Contribuzione clinica alla cura del glaucoma mercè la incisione del tessuto del'angolo irideo. *Annali di Ottalmologia*, Anno XXIV., 1896. Fasc. VI., p. 589.

M. P., 21 years of age, presented, March 8, 1894, in the right eye, simple chronic glaucoma, with a history of slight and transient subacute attacks. V. $= \frac{1}{10}$; T. $+ 2$; F. of V., as in Fig. No. 3.

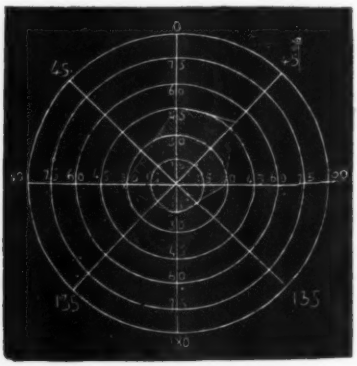

FIG. 3.

After instilling, three times daily, $^1/_2$ per cent solution of eserin without effect until April 7, an irido-sclerotomy was done.

On April 26, V. $= \frac{1}{8}$, Tn., and F. of V., as in No. 4.

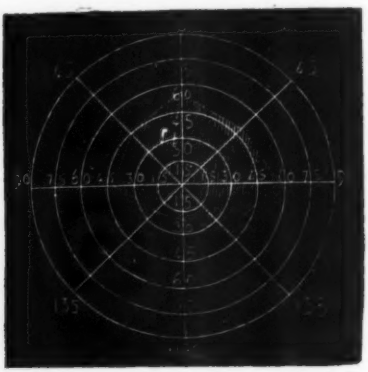

FIG. 4.

On May 19, V. = $\frac{1}{4}$, Tn., and the visual field as shown in Fig. No. 5.

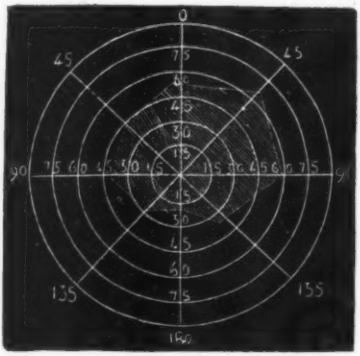

FIG. 5.

The left eye was and is normal.

J. A., 65 years of age, came March 18. R. E. affected with *glaucoma absolutum;* T. + 1. L. E., simple, chronic glaucoma; V. = $\frac{1}{2}$, T. + 1; F. of V. as in Fig. No. 9.

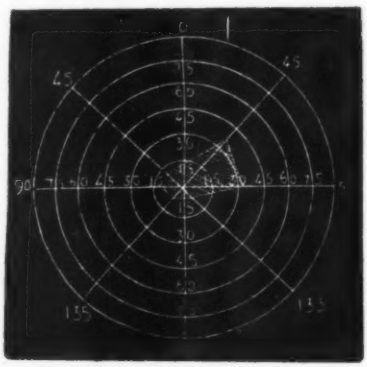

FIG. 9.

March 19. Incision of the tissues at the iridic angle in left eye.

March 25. V. L. = $\frac{2}{3}$; Tn.; F. of V. as in Fig. No. 10.

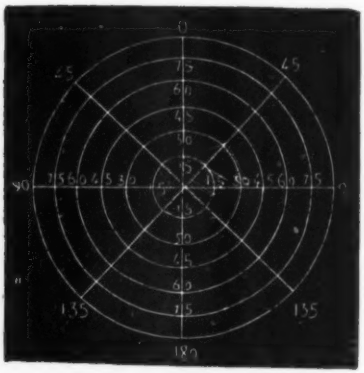

FIG. 10.

March 28. V. L. = 1. with — 1 D.; Tn. F. of V. as in Fig. No. 11.

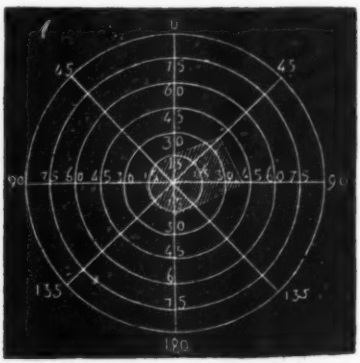

FIG. 11.

The fifteen histories given include ten eyes affected by simple, chronic glaucoma, two of infantile glaucoma—one of incipient buphthalmos with well-marked granular cornea and other irritative symptoms, the other being a genuine case of the simple, chronic form. The other three were certainly of the simple chronic variety, although they all were the subjects of occasional subacute exacerbations.

In two instances a slight hyphema after the operation followed the partial loss of aqueous, but this was absorbed on the second or third day. In another case a more copious hemorrhage into the A. C. was not reabsorbed until the seventh day after the incision.

In every instance the tension became normal within forty-eight hours, except in one eye, where there was T. + 3, accompanied by advanced intra-ocular changes. In this case T. remained + 1.

In every eye vision improved gradually until about the end of the first month, when it remained stationary.

Of all the eyes thus operated upon only one had a return of the disease, and that one not until the end of the seventh month, and then it appeared in the irritative form.

The writer draws attention to the complete disappearance of the glaucomatous excavation in one case and its diminution in another instance. This was due, in all probability, to the fact of the early operations and to the unimpaired elasticity of the tissues. Another observation (also recorded elsewhere by Sgrosso), worthy of note was the increase of the refraction following the incision in one of the cases. Before the operation it was + 3 D., afterwards + 2 D.—probably due to a shortening of the antero-posterior diameter, the eye having returned to its former size when the intra-ocular tension had been lessened.

Clinical Observations on the Surgical Treatment of Strabismus.

Chapters of this monograph[5] have already appeared at intervals in the pages of the *Archives*, and they are still to be continued. It is hoped that it will be published separately as a late contribution to the literature of muscular anomalies by a writer whose authority on such a subject is unquestioned.

[5] E. Landolt. Observations cliniques sur le traitment chirurgical du Strabisme. *Archives d'ophtalmologie.* December, 1895. p. 721.

In 1891 Landolt operated on a school teacher with a divergent strabismus of 27°. The result was very good, not only as concerns the correction of the deviation, but in regard to binocular vision, which was re-established. She had a convergent power (as measured by the ophthalmodynamometer) of 13 meter angles.

Three years later the patient returned, complaining of symptoms evidently referable to an *insufficiency of convergence* (esophoria.) The history showed an excessive use of the eyes, and this fact, combined with a good excursion of both globes, seemed to explain the weakness of convergence by supposing an excess of abduction. At that time the maximum amount of convergence measured only 7 *m.* angles.

Instead of doing another advancement the author sought to re-establish the diminished function of the motor apparatus by a general hygienic course of treatment, rest, reconstituents, exercise of convergence and the practice of binocular fusion.

At the same time he prescribed prisms—those temporary expedients, generally of little value, but which, when judiciously used, may be indispensible to the patient's comfort, and may be employed without doing him harm.

The result in this instance justified the treatment. The amplitude of convergence eventually became the same as before the operation, *i. e.*, more than normal:

$$\left.\begin{array}{l} \text{p.} = 13 \\ \text{r.} = -1.5 \end{array}\right\} \text{a}^{\text{c}} = 14.5 \text{ ma.}$$

The asthenopia disappeared and there has been no subsequent complaint.

Marked insufficiency of convergence he, however, mostly treats by advancement of one of the adductors, but it must first be established beyond all doubt whether or not a particular case belongs to that class where an operation is indicated.

The classic test with vertical prisms and a black dot is not sufficient to enable one to decide the question. Indeed, if we were to rely upon it entirely, few myopes and almost every hyperope would escape an operation.

For a proper examination of a case suspected of insufficient convergent power one must make use of the *dynamometer*, and of a *double prism* provided with the division into meter angles. The *ocular excursions* should be measured by means of the perimeter, and especial attention should be paid to the *refrac-*

tion, the *accommodation* and the general condition of the patient.

It is only when several examinations have been made at intervals, more or less long, that one can establish with certainty a noticeable defect (several meter angles) of convergence. The majority of these patients recover under a general tonic and hygienic treatment. In those cases, and they are in Landolt's opinion rare, where a reconstituent course is ineffectual, an *advancement of one of the interni* is in order. When done with ordinary precautions there is very little danger either of an overcorrection, or of leaving one pupil on a higher level than the other.

The author very rarely does a tenotomy of an abductor for insufficient convergence, and never without being convinced that the difficulty is really due to an *excess of divergence*.

Tetanus Following Enucleation of the Eye.

Although tetanus may follow a wound of any part of the body it is rare after injury to the eyeball or its annexes. The writer, after mentioning a number of reports (among them one by Chisholm of Baltimore) gives an account of his own case as follows: M. P. B., 22 years of age, came for the first time August 22, 1885. At first sight the right upper lid seemed swollen, but on closer examination with the finger at the superior sulcus a tumor was discovered which was evidently pushing the globe from behind forwards and from above downwards, so that the right cornea was a centimeter lower than in the sound side. Seven days later the tumor was extirpated through the lid and without touching the eyeball. The operation was not followed by any incident worthy of mention. Two months later the tumor, having been examined microscopically, was found to be a sarcoma.

The right eye shortly began to again protrude from its socket until, no longer protected by the lids, it began to suffer. The cornea ulcerated, perforation followed, and atrophy of the bulb was the consequence. On January 28, 1886, both the eyeball and the neoplasm were extirpated and the points of attachment of the latter to the upper wall of the orbit were thoroughly burned with a Paquelin cautery. For four days everything

Santos Fernandez. Tétanos consécutif a l' enucléation de l'oeil. *Revue générale d' ophtalmologie*. Feb. 1896.

went well; the orbit was thoroughly washed out with a disinfectant solution every day, after which the patient walked out for exercise. On the fifth day he complained of pains at the right tempero-maxillary joint and of a slight difficulty in moving the jaws, which the attendant ascribed to a localized inflammation of the articulation. The latter symptom increase until on the seventh day he was unable to separate the maxillæ. There was complete trismus, pain on pressure over the dorsal vetebræ, and anuria for twenty-seven hours; it was evident that the patient had tetanus. Chloral hydrate was given at once, in increasing doses; friction with turpentine applications was made along the spine, purgatives were administered and a chloral solution was used to wash out the orbital cavity. On the following day the patient could open his mouth and put out his tongue. The temperature never exceeded 37.5° C. His food was bouillon and milk; appetite good.

The dose of chloral was increased; massage was applied to the arms and legs and, as there was some contraction of the abdominal muscles, they, too, were rubbed with an ointment of belladonna and mercury until ptyalism was produced. On the fifth day a facial contraction, on the side opposite the enucleated eye, was observed and on the eighth day of the treatment opisthotonos, with an intermittent heart and coldness of the extremities, supervened. The pulse, before 85, now ranged from 100 to 120 and became irregular. Fifty centigrammes of quinine were then given to the patient. On the tenth day bloody expectoration was observed and on the eleventh day of the treatment the patient died from pulmonary congestion after an apparent improvement lasting three hours.

For the four days before his death 42 grammes of chloral were given every twenty-four hours.

During the whole illness neither the sound eye nor its pupil showed any appreciable deviation from the normal condition.

Dislocation of the Lens Into the Anterior Chamber and Its Reduction by Massage.

The origin and happy termination of a case of dislocated lens are described by Boggi.[7]

[7] P. Boggi. Un caso di spontanea e completa lussazione del cristallino nella camera anteriore. Riduzione col massaggio. *Annali di Ottalmologia*. Anno XXV. 1896. Fasc. 1. p. 7.

Towards the end of August, 1892, he was consulted by a farmer, 60 years of age, on account of a sudden diminution of vision, noticed in the right eye a few days previously. That his right eye had hitherto had good vision was proven by the fact that he had always used it (and was a good shot) in hunting. He did not know to what he could attribute the change as he had retired one evening, apparently well, had slept soundly during the night and in the morning noticed the visual defect. He had no recollection of any injury, however slight, to the right eye. Of his relatives only one had suffered from ocular disease, and she, a sister, became blind from glaucoma. He had never had any trouble with his own eyes and his health had always been good. He was a heavy smoker but a very moderate drinker and he never had epilepsy, thus excluding at least two of the commoner conditions under which patients labor who receive wounds without being conscious of them.

He had the appearance of a robust man; his eyeballs are somewhat prominent but present the usual shape and dimensions. The lids, conjunctivæ and corneæ are quite normal.

The left shows nothing abnormal except a slight degree of H.

The right eye shows a deep A. C. and gives one the impression that a successful cataract extraction has been performed on it. The iris presents the same appearance as its fellow of the opposite side, but is everywhere tremulous. The pupil is somewhat contracted, but not more so than the other, and is very readily affected by light. Of the three catoptric images of Purkinje only one, reflected from the cornea is plainly seen; the other two pertaining to the lens, are wanting. Oblique illumination also showed no trace of the lens, while the ophthalmoscope reveals a transparent vitreous, normal fundus and measures a high degree of H. Tension normal. There is no monocular diplopia in any position of the head. With + 12 D. visual acuity is almost $\frac{6}{6}$. The diagnosis is *spontaneous and complete dislocation of the crystalline* into the depths of the vitreous chamber.

"I regarded as useless, as well as dangerous, any attempt at extraction and believed it would be better not to interfere as long as the lens was stationary and was not a source of ocular irritation. I accordingly merely prescribed a pair of lenses with a + 12 D. before the aphakic eye. I also atropinized the eye and

asked the patient to return so that I might discover, if possible, the position of the lens or exclude the possibility of a congenital *ectopia lentis.*"

The patient did not return, however, until about three years afterwards, complaining of the affected eye. He said he had been quite well and had got along nicely with his glasses until September, 1894, when he was seized with violent pains in his *left eye* and left side of his forehead. He applied to Professor Rosmini, who carefully examined him, confirmed the original diagnosis (of dislocated lens, etc.), and advised an operation for the secondary glaucoma from which, he informed the patient, he was suffering. A sclero-iridectomy was done, followed by relief from the pain and a considerable improvement in vision. All went well until the 7th of last March. During the night he was suddenly attacked by severe pains in the *right eye.* He was also found to be suffering from ill health due to chronic gastric catarrh.

On further examination it was found that the luxated lens, for three years concealed in the vitreous, had forced its way into the anterior chamber.

St. pr. O. D.; reddened conjunctiva, marked ciliary injection, transparent cornea; abundant lachrymation. The A. C. is abolished and occupied by a spherical, lenticular, whitish, streated body. T. minus and V. = qualitative perception of light.

Atropia with cocain was at once instilled into the right eye and attempts were made to reduce the displaced body by bending back the head and giving it slight blows. But as it did not return and the pains being increased by this maneuver, Boggi resorted to frequent instillations of eserin and a compression bandage preliminary to removing the lens—as advised by de Wecker.

But the lack of space in the anterior chamber for the manipulation of instruments and the fluid state of the vitreous appeared to contraindicate the proposed operation, and in his perplexity he consulted Prof. Rampoldi, who proposed massage of the cornea, having for its purpose the reduction of the dislocated crystalline. This expert operator succeeded, by pressure and counterpressure exerted with his thumbs upon the half-closed lids, in pressing the lens through the pupil into the posterior chamber. Immediate relief was given; the peri corneal

injection disappeared. The pains became less and the patient could count fingers. Through the pupil, irregular and immovable, but once more black, the cloudy lens could be seen below the horizontal plane.

The patient was placed upon his back and eserin instilled until (in three days) the pupil regained its normal size. He was then advised to use it twice a day for some time. With his correction the patient obtained V. of $\frac{1}{2}$, and at the time of writing, nine months after the reduction by massage, he has had no return of the symptoms.

Then follows a literary review of similar histories, Rampoldi being accorded priority in the treatment of anterior luxation of the crystalline by massage of the cornea.

ABSTRACTS FROM RECENT SPANISH OPHTHALMIC LITERATURE.

By Dr. Albert B. Hale,
of Chicago.

Trachoma in Mexico—Corneal Disease Peculiar to Mexico—Iridectomy in Glaucoma—Meeting of the First Spanish Congress of Otology, Rhinology and Laryngology.

Dr. J. Ramos, in an article recently published in the *Gazeta Medica* (of Mexico), draws an interesting comparison between the conditions found in European ophthalmic clinics and those prevailing in the City of Mexico. He states that trachoma, which he saw so commonly in Germany, is an almost unknown rarity in Mexico (city), and when a good case is found it is enough to attract the attention of the whole resident profession. He draws attention to the fact that among the Mexicans presbyopia begins much earlier than is the rule in Europeans. It would be an attractive study to determine whether this is a true racial characteristic, such as is the early maturity of women living nearer the tropical zone, or whether it is merely analagous to the early senility manifested in every people who live much out of doors, but whose hygienic surroundings are in other respects so improper as rapidly to exhaust the vital powers.

Corneal Disease Peculiar to Mexico.

Dr. Ramos reports a corneal inflammation which appears to be peculiar to Mexico, inasmuch as he never saw an exactly similar case in any European clinic. He would designate it as a *perikeratitis miliaris*. It occurs usually in children and in adults of impaired constitutions, especially during the heat of summer. Its history is not unlike that of conjunctivitis follicu-

laris. The palpebral conjunctiva is injected, the pericorneal margin relatively less so. There is little lachrymation, no secretion, some ciliary pain and slight photophobia. At the periphery of the cornea are seen minute miliary ulcers looking like needle punctures; these may be preceded by phlyctenules formed by elevated epithelium. The ulcers are best seen by oblique illumination and reflected light. Prognosis is good; treatment that of phlyctenular keratitis.

Iridectomy in Glaucoma.

Dr. Santa Cruz, Director del Instituto Oftalmico, reports that, in his experience, iridectomy is of inestimable service in acute glaucoma, but that in subacute glaucoma the results are less brilliant, while in the chronic form it is of moderate benefit only.

REMARKABLE IMPROVEMENT OF THE HEARING FOLLOWING OSSICULECTOMY IN A CASE OF OTITIS MEDIA ET INTERNA.

By H. A. Alderton, M. D.,
of Brooklyn, N. Y.

MR. Walter B. P., 29 years of age, watchmaker by trade, had had deafness of the left ear for nine years and of the right ear for five years, which had been stationary for five and three years respectively, with constant hissing tinnitis in both ears. He is of a fine physique, and, barring his ear trouble, is free from disease.

After a thorough trial of the ordinary treatment he accepted the proposed trial of operative interference.

Examination prior to operation gave the following results: Auricles and canals normal, tympanic membranes slightly dulled, otherwise fairly normal; watch not heard on either side, whisper heard $^1/_2$ an inch on the right and not at all on the left side, loud speech heard one foot on both sides, Galton whistle heard at the mark 2.5 on the right and at 2.8 on the left, Weber heard on the left side.

Tuning-fork tests, as arranged according to the writer's *schema:*

		A. S.						A. D.						
Rinné		BC	BC	BC	BC	=	AC	BC	BC	BC	BC	=	AC	Duration in seconds.
Schwabach	AC	11	13	11	15	16	10	11	10	12	18	15	10	
	BC	22	17	13	16	10	2	21	19	13	19	11	1	
Tuning-forks		C^{-1}	C	C^1	C^2	C^3	C^4	C^{-1}	C	C^1	C^2	C^3	C^4	

From the results of the functional tests it was evident that most of the trouble existed in the middle ear (in the sound conducting apparatus), though the acuteness of the sound perceiving apparatus was slightly impaired.

January 30, 1896, removed the tympanic membrane, malleus and incus of the left ear under cocain (20 per cent) anesthesia, with immediate marked improvement of the hearing; whisper heard five feet, speech sixteen feet. This improvement was almost obliterated by the post-operative swelling and the subsequent discharge. As the swelling and discharge abated the improvement again manifested itself and has increased up to date, though the drum membrane has entirely reformed. The patient to-day, March 23, hears the whisper six feet and speech up to forty-five feet. As a matter of comparison between the condition previous and subsequent to operation, the quoted question, asked in all seriousness, will serve: "*Doctor, are you aware that the elevated railway makes an awful noise?*" The tinnitus was vastly improved. The newly-formed drumhead is grayish, not unlike a thin sclerosed membrane, quite resilient to the touch of the probe and fairly firm and contains no opening.

The writer would lay stress on the fact that the improvement in the hearing has not only been maintained but has increased, notwithstanding the usually considered disadvantageous reformation of the drumhead.

138 Clinton Street.

ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OTOLOGICAL JOURNALS.

By T. Melville Hardie, M. D.,
of Chicago.

Tuberculous Disease of the Middle Ear.

Milligan. (*Medical Chronicle*, January, 1896.) The occurrence of primary tubercular affections of the middle ear in patients in other respects apparently in good health, has not been extensively noted and it is to this class of cases that the author directs special attention. The paths of infection are the (1) Eustachian tube (2) blood vessels and lymphatic channels of the tympanic mucosa, (3) an existing perforation on the drumhead. Milligan suggests the following which is at any rate novel: "Amongst infants * * * the effects of sucking from the mother's breast or from the feeding bottle, producing as they do, alternately a negative and then a positive pressure in the pharyngeal and post nasal regions, and consequently in the middle ear, with a resulting alternating current of air passing from the one cavity to the other, may be the means of conveying bacilli—introduced either aerially or with the food—into the cavity of the middle ear." We are to remember that in the child the Eustachian tube is relatively shorter, wider and straighter than in the adult. If the disease is acute, rapid cellular infiltration followed by equally rapid caseous disintegration occurs. In the more chronic forms the miliary tubercles early become caseous and form superficial ulcers. Under favorable circumstances a process of fibrous tissue formation may bring the morbid process to an end, usually, however, extension takes place to the bone, cario necrosis results, which may end in opening up of labyrinth mastoid cells or intra-cranial cavity. It must not be taken for

granted because tubercle-bacilli are not found in the pus that therefore the affection is non-tubercular. Habermann found them in five out of twenty-one tuberculous ears examined. Nathan twelve times in forty cases. In three of these in which extensive caries was present there were no signs of pulmonary phthisis.

From a clinical point of view it is of the utmost importance to know definitely whether a case is tubercular or not. The coexistence of certain symptoms, the sudden onset of a purulent discharge unaccompanied by any of the usual attendants of an acute sthenic inflammation and the occurrence of a perforation covered by a creamy secretion in the center of a pale, œdematous and uninflamed membrane should always excite suspicion. The onset is essentially insidious. Extensive middle ear disease may take place without any perforation of the drumhead. In such cases the first local symptoms are either enlargement of the glands around the ear or the sudden occurrence of facial paralysis. The absence of any reactionary symptoms accompanying the suppurative process is a most suspicious indication of the essential character of the disease. The presence of these symptoms is not, however, sufficient to warrant an absolute diagnosis, and if the bacillus cannot be found in the aural discharges we must proceed to the inoculation test. Following Delépine, Milligan conducted an experimental investigation of ten cases of suspected tubercular otitis media. In each case the mastoid process was opened. A scraping of diseased bone was placed in a sterilized tube and subsequently inoculated into the subcutaneous tissue of a guinea-pig's hind leg. After a few weeks the animal was killed and scrapings from enlarged glands and sections of liver and spleen were examined. Of the ten cases the tubercular nature of the disease was established in eight.

Returning to the diagnosis: In tubercular cases the progress of the inflammatory process is asthenic from the beginning. A point of very great importance is the extensive destruction of bone which occurs at a comparatively early stage of the disease and frequently with little or no external evidence of what is going on. Milligan reports an instructive case. A girl, 15 months of age, had a slight but offensive discharge from both meati. Both external canals were almost blocked by masses of pale, flabby granulation tissue, and the probe showed the pres-

ence of bare bone. Careful examination of the mastoid processes gave no evidence of any trouble, there being no swelling, no œdema and no pain or percussion. It was decided to open the mastoid cells to secure free drainage from the middle ear. On incision and retraction of the flaps a large fistula filled with soft pultaceous-looking débris was seen. The large cavity into which this opened communicated with the middle ear. A similar condition was subsequently found on the opposite side. Milligan further insists upon the early and frequent presence of facial paralysis in tubercular cases. While not pathognomonic it is always suggestive.

The prognosis is distinctly graver and the younger the patient the graver the prognosis. In the ten cases above referred to the death rate was 62.5 per cent. These were hospital cases and children under 3 years of age. The occurrence of tubercular meningitis is probably at times directly due to extension of a middle ear or mastoid tuberculosis.

The treatment is local and general. Locally free drainage must be secured by early and extensive opening of mastoid and middle ear. The sooner the operation is done the greater chance has the patient to retain his hearing power. A strong search light should be used and meninges and lateral sinus may be exposed without fear. Recurrence may take place even after thorough operation. Milligan operated four times upon one child with complete ultimate recovery and restoration of the hearing power.

Necrosis of the Labyrinth.

CONNAL. (Glasgow *Medical Journal*, September, 1895.) A man, 29 years of age, had severe pain in the left ear, with a purulent discharge, pain and swelling of left mastoid, headache and slight giddiness. The patient had had a discharge from the ear for twenty-five years and two years before had pain and swelling of the same mastoid process. His present trouble was of two weeks' duration. The cavity of the left middle ear was filled with granulation tissue. He was deaf in this ear, not hearing the watch on contact. The sound of a tuning-fork on the vertex was referred to the right ear. After removal of the granulation tissue and syringing, the apex and a part of the central coil of the cochlea came away. The hearing power was again tested with the same results three months later.

Defects of Hearing and Mental Deficiency in Children.

PERMEWAN. (Liverpool *Medico-Chirurgical Journal*, July, 1895.) The exact facts on these points of deafness and stupidity can only be arrived at by careful examination, Of 1,055 children Von Ruckard found 22 per cent with marked deficiency of hearing. Weil of Stuttgart found it in 30 per cent. Permewan examined in an industrial school 203 children, 10 to 15 years of age; 50 girls and 153 boys. They were all of the neglected class. The hearing was tested with a watch (heard 60 inches), and with a speculum. The presence of enlarged tonsils and of adenoids was also noted. The children were divided into three classes, good, fair and bad in an intellectual sense, according to report of the teachers. Permewan examined the hearing power of both ears, recorded them separately, and then took the mean of the two to represent the comparative hearing power of the child. The result is given in inches. He then added together the mean hearing distances of the three classes of children respectively, divided each by the number of children of that class, and thus obtained the average mean hearing distance of the good, fair and bad children respectively. Of the 203 children:

62, bad, average mean hearing distance, $31\frac{1}{4}$ inches.
52, fair, average mean hearing distance, $47\frac{1}{3}$ inches.
89, good, average mean hearing distance, 51 inches.

Thus the average hearing distance of the very backward children was only one-half of the normal. Of the good it was more than five-sixths of the normal. In 15 of the worst children the record of hearing power is particularly bad.

As regards the presence of adenoids, these were found:

Bad, in 28 out of 62, - - - 45 per cent.
Fair, in 16 out of 52, - - - 30 per cent.
Good, in 19 out of 89, - - - 21 per cent.

NOTES FROM FRENCH OTOLOGICAL LITERATURE.

By George Morgenthau, M. D.,
of Chicago.

Etiology of the Localization of Inflammatory Processes in the Temporal Bone in Their Relation to the Anatomical Development of the Bone.

Lubet-Barbon. (*Journal of Laryngology*, February, 1896.) In man it is difficult to trace the three primitive divisions of this bone, but in osteites of the temporal bone the inflammation is frequently localized and confined to one or other of these portions. We should not use the term mastoiditis in every case of abscess. Sometimes not only the mastoid is affected but also the squamous portion of the tympanic part, in which case both should be opened. One only of the three divisions of the temporal bone may be affected. Usually in chronic cases the trouble is limited to the point of coalescence of the three divisions of the bone at the level of the antrum. It is to this in the first instance that we should direct our attention in order to work from that point downward and backward toward the mastoid, upward toward to the squamous, forward toward the tympanic.

Auscultation of the Mastoid Process With Regard to Sclerosis.

Okunnief. (*Journal of Laryngology*, January, 1896.) It is most important to determine in a case of chronic suppuration, whether or not the mastoid process is sclerosed. When chronic suppuration of the middle ear is complicated with sclerosis of the mastoid process, it becomes dangerous to life. In sclerosis and obliteration of the cellular structure, the pus in the mastoid process is obliged to work inwards toward the sinuses and meninges. Absence of pain in this form of the disease renders it the more difficult to detect, the high temperature being the only

clew. In chronic suppurative otitis with sclerosis, the sooner operation is begun the better chance there is for success. Those complicated with sclerosis are usually accompanied with rigors, sweats and headache in forehead or temples. By auscultation, we find that, where there is sclerotic change in the bone, the sound of a tuning-fork placed against the skull is heard louder upon the diseased than the other side of the head, because the affected bone is more compact. When carious spaces of small size are found in a mastoid process with sclerosed bony tissue, the experiment must be tried repeatedly and strict attention given to the slightest dullness when it is permanent.

Cavernous Angioma of the Ear.

MOURE. (*Journal of Laryngology*, January, 1896.) Prof. Politzer writes that the two chief forms of aural polypi found are round cell-polypi and fibromata. Those traversed by numerous blood-vessels acquire the character of cavernous polypi or angiomata. True myxomata are by far the rarest, though angiomas are also rare. Dr. Moure cites the case of a lady 47 years of age, suffering from tumor of the ear, which had caused headache and hemorrhages. An attempt had been made to remove it when a flattened tumor was discovered, presenting a kind of cavity. The peduncle only remained visible upon examination three days after and this almost disappeared under the action of alcohol installations. At the first examination Dr. Moure found a dark red tumor at the opening of the meatus, like a grain of corn in form, on top of another smooth tumor, pinkish-gray in color and globular, to which the first was united, the second burying itself in the meatus and seeming to be inserted near the postero-superior wall of the tympanic cavity. A little yellow pus of faint odor issued around the tumor. Upon passing the snare and avulsing in the usual way, a large quantity of blackish blood poured from the meatus. In spite of pledgets of wool the hemorrhage continued, giving the impression that he had opened possibly into an aneurism of the jugular vein. A fresh iodoform tamponment, kept in the meatus by means of liquid collodion, stopped the flow. On the fifth day the tampon was removed unattended by hemorrhage. The tumor removed consisted simply of a shell with a cavity of the calibre of a large vessel. Histological examination showed it to be an angiomatous polypus, with fibrous portions.

The Sensitiveness of Deaf Mutes and Their Legal Status.*

OTTOLENGHI. (*Journal of Laryngology*, January, 1896.) From a careful examination of forty-four deaf-mutes the author draws the following conclusions:

1. The deaf-mute, as a rule, is endowed with organic and mental sensitiveness little inferior to the normal; often it is quite normal.

2. It is both just and necessary to reinstate him in civil life and in his penal responsibility.

3. As it has been demonstrated that the sensitiveness of the deaf-mute varies very little from the normal, and as it is known how great an influence the senses have on mental development in all systems of education, we ought to give much attention to "gymnastics" of the senses, not only for the purpose of instruction by the oral method, but because they are one of the most efficacious methods for promoting psychical development.

4. Bearing in mind the individual varieties in sensitiveness in deaf-mutes, it is useful to divide them into different categories for purposes of instruction, in this way assisting the teacher and rendering the instruction more advantageous to the pupil.

5. In view of the conditions of the principal organs of sensation in deaf-mutes, we have a greater obligation to see that they enjoy an education which develops the faculties given them by nature.

6. Both for medico-legal and educational purposes it is useful, and in some cases indispensable, to examine the condition of sensitiveness of a deaf-mute, in order to determine his mental condition.

The Equilibrium Function of the Ear.

CLARK[1] presented the results of recent physiological investigation. The most important of these experiments were by Dr. Lee, of Columbia, on the dog-fish. The cartilaginous skull of this fish permits a careful and almost bloodless operation. The three important points noted were: (1) The motor effects

* Read before the fifth International Congress of Otology, Florence, 1895.

[1] Report of nineteenth annual meeting of the Medical Society of the State of New York, January 28 to 30, 1896. *American Medico-Surgical Bulletin*, February 1, 1896.

accompanying rotation of the body of the uninjured fish; (2) the effects of gentle pressure on the external surface of the exposed but uninjured ampulle; and (3) the effect of section of the ampullar nerves just before their entrance into the membraneous labyrinth. Thus, on turning the fish 45° to the left on its longitudinal axis, the eyes rotated in the opposite direction. Simultaneous stimulation of the ampulle of two vertical canals on the left side produced the same movements of the eyes.

Certain movements of the fins were also noted on such rotation of the fish; they tended to return the fish, when in the water, to the normal position. After sections of the nerves passing to the ampulle of two vertical canals on the left side, the eyes and fins moved as if the corresponding ampulle on the opposite side had been stimulated. Apparently, therefore, sections of the nerve on one side cut off the normal impulses, and left the normal impulses on the other side unbalanced, giving the impression to the fish of being turned to one side. If, with the head of the dog-fish down, the fish were rotated on its transverse axis, the eyes and fins would move in an effort to return the fish to the normal resting position. Similar results to those already mentioned were obtained on stimulation or division of the ampullar nerves. When the fish was turned on its vertical axis the eyes and fins made corresponding movements, indicating an effort to restore the equilibrium. The speaker said that he had also collected a good deal of clinical evidence to the effect that the semi-circular canals in the human ear functionate in a similar way.

Anesthesia by Guiacol in Diseases of the Ear, Nose and Throat.

George Laurens (*Annales des Maladies de L'Oreille, du Larynx, du nez et du Pharynx.* Paris, January, 1896; Vol. XXII, No. 1.) Induced by the good results of the use of guiacol as an analgesic (applications in acute tonsollitis, externally in rheumatism, sciatics, intercostal neuralgia, gonorrheal orchitis, etc., bringing about rapid diminution of the pains and the inflammatory phenomena in all cases), and as an anesthetic, subcutaneously and sub-mucuously administered, in dental surgery and certain surgical operations (opening of abscess, hygroma, fistula in ano, etc.), the author experimented with this drug in operations on the ear, nose and pharynx; no laryngeal case

presenting itself. The observations extended over only two months and a limited number of instances. Although its value can not as yet be definitely decided, it is well worthy of trial.

Guiacol was dissolved in perfectly pure olive oil in two strengths—1 in 10 and 1 in 20. The first was soon abandoned since the anesthesia obtained by the latter was quite sufficient.

After syringing the ear five or six drops of the warmed oil were dropped into it and left for fifteen or twenty minutes. Then the surplus was removed with absorbent cotton. The nose and throat were painted repeatedly with the cotton-wrapped probes.

In three cases of poracertesis in acûte middle ear suppuration the drum membrane was relatively well anesthetized. One patient, very timid and convalescent from a severe illness, experienced but little pain; a second one, although nemopathic, admitted that he had no painful sensation whatever; in the third anesthesia was incomplete, but the sensibility was, nevertheless, greatly diminished. In these three cases the results were favorable, at least equal to those obtained by cocainization. It remains to be seen if this oily solution of guiacol will not moderate the exquisite pain on incising furuncles of the external canal, or affect the intensity of the inflammatory phenomena in furunculosis and acute affections of the middle ear. Anesthesia by this drug in nasal operations, as cauterizations, removal of polypi, etc., required much longer time than by means of cocain. The lower turbinated, for instance, was painted two or three times, energetically, for one minnte; in the intervals a saturated pledget of cotton was left in contact with the membrane. Most of the patients did not complain of any pain; a few, of heat and pressure. A great disadvantage lies in the fact that the tissues do not retract and render a thorough inspection of the nasal cavity easy.

Anesthetizing the pharynx by painting was more difficult on account of the reflexes, but satisfactory. In three children the tonsils could be cauterized without producing pain. It was not successful in attempt to remove a hypertrophied tonsil with the hot snare painlessly. In future it might be advisable to combine painting with the injection of a few drops into the panechyma. In acute and inflammatory affections of the throat it is useful as analgesic. Painting the naso-pharynx on three successive days relieved the irritation and discomfort in swallowing for several hours. In the afternoon the symptoms reappeared,

but it is probable that repeated applications of a weaker solution during the day would give excellent results.

Perhaps a different vehicle than oil would hasten the absorption of the guiacol and thus do away with the unpleasant feature of the delay in action. There were no outward symptoms, only occasionally a prickling sensation, accompanied by vivid redness, never lasting more than twenty-four hours. Never were there any signs of disagreeable effects on the circulation or respiratory systems as sometimes occur after cutaneous applications of guiacol.

Sero-Mucous Effusion Into the Mastoid Process—Evacuation by the Air in the External Canal.

D. A. COURTADE. (*Annales des Maladies de L'Oreille et du Larynx.* Paris, February, 1896. Vol. XXII, No. 2.) It is known that, in acute middle ear affections, the mastoid process participates in the inflammatory process of the neighboring mucous membrane in a great number of cases, if not in all of them. Aside from suppurative mastoiditis producing more or less decided symptoms and demanding immediate intervention, the nature of the mastoiditis is generally unknown. It is probable, at a certain stage of the mastoid involvment that the effusion not yet purulent but analogous to that in the tympanic cavity; but the fact remains to be proven without resorting to an operation on the bone which is useless and unnecessary. Two cases are presented which are in point.

A woman 32 years of age experienced severe pains in the head, nausea and vomiting, while menstruation suddenly ceased, about six months ago. The right drum membrane shows a uniform slight redness and has not lost its gloss. The left is hidden by a white covering of macerated epidermis. On its removal a bulging is seen in the posterior half of the drum membrane. Incision does not allow fluid to escape. On applying Siegle's speculum and pressing the bulb a wave of lemon-colored liquid immediately rushed against the glass; and after three compressions of the bulb the instrument is nearly filled. The liquid was so abundant that medical bystanders asked, loud enough for the operator to hear, if the meninges had not been perforated and cerebro-spinal fluid evacuated. Three days later the patient returned and stated that clear liquid had escaped for thirty-six hours, giving her great relief; she had slept through-

out the whole preceding night. The patient ceased coming before the otitis media was completely healed, but she left much improved after the last consultation.

A second patient, a woman 38 years of age, had an acute otitis on the left side, without apparent cause, in January. She sought advice only March 19, when suppurative otitis on the left side was found. On April 4 a swelling appeared which extended three inches beneath the left ear backward to the middle of the mastoid; it pitted on pressure; motion of the head was embarrassing and painful.

April 9 compression of the air of the external canal was made with Siegle's speculum, which quickly filled with lemon-colored fluid as in the first case. Preliminary paracentetis was unnecessary, as the tympanic perforation was large enough. The swelling beneath the ear disappeared without operation, and patient was cured of the otitis soon afterwards. The liquid thus evacuated was of lemon hue, of the color of morning urine; threads of mucus in considerable quantity were found. Unfortunately, chemical and bacteriological examination could not be made, because the liquid was thrown away by inadvertence.

It would be puerile to state that the drum alone could contain such a quantity of liquid; it follows that it must have come from the mastoid cells and that communication between the two cavities was broad. The idea that it might have been cerebro-spinal liquid is not worthy of consideration, for everything militates against it. Even if, in the first case, concoction was preceded by paracentesis in the inferior segment of the drum membrane, which could not in any way injure the meninges, even admitting the presence of an extensive dehiscence of the roof of the tympanic cavity; in the second case no operative intervention was made before the expulsion of the liquid. Moreover, the color and the presence of mucus in great abundance suffice to reject such a hypothesis.

Judging from the quantity of the liquid the conclusion is permitted that the mastoid process, in these cases, consisted of large pneumatic cells which communicated freely because diploic or sclerotic tissue could not contain such a quantity of serous fluid in its sinuosities (meshes). Aspiration did not accomplish the coagulation of the fluid, could only be removed by compressing the air in the external canal. The author's attempt to explain this paradox is not convincing.

TRANSLATIONS FROM CURRENT FOREIGN OTOLOGICAL LITERATURE. (ABRIDGED.)

By H. A. Alderton, M. D.,
of Brooklyn.

Vertigo.

Mendel. (*Deutsche Medicinal Zeitung*, 1895, No. 46.) The attack usually begins in the eyes, many patients perceiving first a haziness or blackness before the eyes, or dilatation and contraction of the pupil may be observed, or, in other patients, the first symptom is double vision; together with these, objects are distorted, be they near or far, above or below.

A condition of anxiety or numbness follows these disturbances, then disturbance of the equilibrium, staggering. In a number of cases as sequelæ appear occipital pain, tinnitis, temporary partial deafness, vomiting, sweating, retardation of pulse.

The author concludes that vertigo originates entirely through affections of the muscular apparatus of the eye.

Meniere's Symptom Complex.

Dr. L. V. Frankl-Hochwart. The author arranges the symptoms according to the following *schema:*

1. Disease occurring in, until then, normal organs of hearing.
   (*a*) The apoplectic form of Meniérè's—probably from hemorrhage in the labyrinth.
   (*b*) The traumatic form—as from a blow on the ear.
2. Diseases in the already pathological conditions of the ear.
   (*a*) Middle ear processes; *a*-acute, *b*-chronic.
   (*b*) Labyrinthine processes; *a*-acute, *b*-chronic, y-transitory toxic forms.
   (*c*) Processes in the external auditory canal.
   (*d*) Diseases of the ramifications of the acoustic nerve; *a*-isolated in Tabes, *b*-in the course of brain diseases.
3. Aural vertigo due to external violence.
4. Pseudo-attacks of Meniérè's, in the neurotic.

Experiences with Sinus Thrombosis Due to Middle Ear Suppuration.

A. JANSEN. (Volkmann's Sammlung Klin. Vorträge, No. 130.) The author observed twelve cases in 1893, operating upon nine, of which five were cured, one of the last, however, dying later from septic pneumonia.

In thrombosis of the cavernous sinus and of the *torcular herophyli* ensues more easily arachnitis, whose percentage of occurrence (*Procentsatz*) through radical operation has fallen from 38 per cent to 9 per cent. Less influenced are the pulmonary metastases, that appeared in 62 per cent of the cases, in which thrombosis of the jugular occurred.

As concerns the diagnosis, fever can fail, when closure of the jugular exists. Choke-disc is mentioned in the literature in 53.5 per cent of the cases of sinus thrombosis, but in twelve cases of intradural complication it was noticed only three times, in three cases of the cavernus sinus not at all. As a complicating purulent meningitis is not to be distinguished from hyperemia or serous infiltration, so shall their first symptom "as the last warning to the treatment" be esteemed. The diagnosis of extension of the thrombosis to the jugular is made easy, when tenderness and pain in swallowing on the diseased side, hard cord, swelling of the glands and stiff-neck appears.

Affection of the cavernous sinus produces swelling of the "Lider Exophthalmus," disturbances of speech through thrombosis of the a. foss. Sylvii, swelling behind the ear from involvement of the mastoid emissary vein. In all recent cases exists a collection of pus around the sinus. Pressure symptoms, sequestra, phlegmons, infiltration of the soft parts or tenderness only, as well as interference with the movements of the head, especially in the sagittal axis, are in connection with symptoms of brain pressure characteristic of brain-sinus-thrombosis. Their early operation can prevent thrombosis, resp. infection of the sinus. On exposure of the sinus, the color, consistency, perforations, gangrene is to be considered; discoloration alone, with or without existence of movements due to pulsation or respiration is without great significance, "in doubt one employs aspiration."

The results of operations upon the sinus, according to the findings of the Berlin Ear Clinic follows. In twenty-nine cases not operated upon two were cured, in sixteen operative cases

eight were cured. From general surgical principles is the following necessity explained by an example. It is true we cannot exclude the existence of a purulent secretion back of them or in the condyloid emissary vein or in the occipital sinus, when we come upon a firm thrombosis or fluid blood. With the jugular we cannot go so far, since through that we would increase the danger of infarction. Should the bulbus also be affected, then is the inferior petrosal sinus endangered and this danger is not excluded through ligation of the jugular, on the contrary, in certain conditions increased. As to the value of ligation of the jugular in general, judgment is as yet not settled.

The method for operating for thrombosis is as follows: ⌋ or ⌐ incision (right,) exposure of the bone widely backwards, the mastoid emissary vein is important. The posterior fossa of the skull with the dura is by parallel (horizontal) chiseling exposed, the sinus by vertical chiseling. Finally excision of the sinus wall must follow, in order to provide against recurrence. Then wait; should continued high fever or chills appear, or pus spread to the bulbus, the jugular should be tied near the jugular foramen and the facial vein be tied also.

In the clinical histories that follow, the above views are confirmed. In the first, the author offers an example in which the typical signs of osteophlebitis, according to Körner, existed and the operation demonstrated sinus suppuration. In the patient, Herring, is especially interesting the absence of choke-disc in thrombosis of both ophthalmic veins. In the patient, Wenzel, the author refers the bilateral synchronous nystagmus to an injury of the can. vertic. inf., although the left cerebellum adherent to the posterior petrosal wall was found on autopsy.

Foreign Bodies in the Ear and the Consequences of Attempts at Extraction.

Voss. (*St. Petersburger Med. Woch.*, 1895, No. 23.) Author communicates a case in his practice, in which through improper attempts at removal of a foreign body and the damage contracted therefrom the death of the patient was brought about. The case is as follows: A child 5 years of age, stuck in his right ear a St. John's bread kernel. Four physicians sought, at first by syringing, then, as the same proved without results, with the forceps, to remove the foreign body. After three days the child was brought to the author with a tempera-

ture of 39°, headache, and pain in the interior of the ear. In the external auditory canal was found a sero-sanguinolent secretion, the canal walls were completely deprived of their cutaneous covering. Believing that the above attempts at removal had failed only through the absence of the use of anesthesia, the author proposed instrumental relief, to which the mother gave consent only after two days had passed. The auricle was turned forward, the posterior osseous wall concentrically enlarged and the sought-for kernel removed, No fall of temperature occurred after operation; drowsiness, coma, convulsions, and death in two days.

Optic Aphasia in Otic Purulent Meningitis of the Left Temporo-sphenoidal Lobe—Recovery.

A. JANSEN. (*Berlin. Klin. Wochenschr.*, 1895, No. 35.) A locksmith, 31 years of age, chronic suppuration of the left ear, suffered, two days before admittance to the Berlin Ear Clinic, with otalgia, headache, delirium and rigors. Examination—Appears very ill, no paralysis, cannot stick out the tongue and utters only the words "thut nicht weh." Pain on moving the head especially in the transverse axis. Tenderness on percussion over tne left mastoid, squama and occiput. Postero-superior perforation leading to the attic, with very fœtid epithelial débris. The absence of symptoms of irritation, paralysis and hyperesthesia, the slight fever, permitted the exclusion of diffuse meningitis and the tranquility, the sensory aphasia and the peculiar deportment the acceptance of a circumscribed affection of the left temporo-sphenoidal lobe. Operation, July 22, 1892—The antrum of the sclerosed mastoid process was necrotic superiorly and posteriorly as well as the tegmen tympani and antri, after their removal the dura of the temporo-sphenoidal lobe was found discolored greenish-yellow, and gangrenous in pieces the size of a mark. The posterior fossa of the skull and sinus normal. Upon aspiration of the temporo-sphenoidal lobe a small drop of thick yellowish pus flowed out of the opening. Incised the dura with the arachnoid and cerebral tissue which had grown adherent to it. An incision $1\frac{1}{2}$ *cm.* deeper gave exit to no pus. The dura was loosened from the arachnoid and cortical substance, which were discolored a yellowish-green and infiltrated with pus. Iodoform gauze dressing. The temperature fell in the evening. Patient shows his

tongue and speaks more freely, understands almost all questions.

July 27. Clear minded, but objects, whose significance is perceived, can not in part be named (optic aphasia), many also not after touching. He can name written things, read incompletely, recognize objects pointed out, recognize and name colors, Apparently there is "a collection in the connecting tract between the occipital and temporo-sphenoidal lobes, which takes its way through the medullary substance of the inferior temporo-sphenoidal lobe."

On the 29th, could not name pointed out and written objects, adroitly picks out named objects, also no sensory aphasia.

Completely cured January, 1893.

Brief return of the suppuration April, 1894.

In conclusion upon the case the author mentions the possibility through operation still to induce a cure, where in already described pachymeningitis, suppuration of the labyrinth, extradural abscess, sinus thrombosis through dissemination from the infected colony, also easily through "secondary hyperemia and serous infiltration of the arachnoid and the cortical substance in further extension," incurable diffuse purulent meningitis is exchanged.

A Neurosis of the Inferior Maxillary Articulation Simulating Ear Disease.

Bruck. (*Deutsche Med. Wochenscr.*, 1895, No. 32.) B. describes five cases of otalgia, in which the cause of the localized pain in the ear was found to be a neuralgia of the inferior maxillary articulation. It attacks exclusively patients of the female sex in youth and middle age. B. explains the otalgia as a radiation from the articulating ramus of the auriculo-temporal nerve to its aural ramifications, or as a mistaken attribution of the pain in the joint to the neighboring ear. (Schwartze has attributed the above condition to rheumatism of the inferior maxillary articulation—Grunert.)

A New Instrument to Draw Out the Manubrium in Marked Retraction of the M. T.

Lucae. (*German Otol. Soc.*, Jena, 1895.) In cases of this kind the attempt has already been made to draw out the manubrium by means of a small hook and thus sever existing synechiæ. Such attempts should only be indulged in cases in which it can be

undertaken without producing gross damage to the neighboring parts. Any kind of a hook offers no sufficient guarantee of this, nor will the purpose be attained, if without caution insufficient skill is used.

Lucae has remedied this lack by the construction of a small instrument which exerts traction by means of a spiral screw. The mechanical contrivance is very simple. The shaft of the hook passes through a cylinder, in which it is usually held fast by a spring. If one draws on the handle of the screw the hook glides slowly outwards under gradually increased traction. In performing the operation the instrument is introduced with the right hand, the sharp hooklet introduced before or behind the short process, according to the room, and the manubrium gently pulled. Then the cylinder is taken in the left hand and the screw turned with the right hand, thus bringing the hook outwards. The tractive power exerted is read off on a millimeter scale.

Lucae has used the instrument for over a year and has tried it in fourteen cases, of which six were substantially bettered. No inflammatory reaction occurred in any case, and rapid healing occurred with minimum wounding of the M. T., the operation being frequently repeated in the same patient.

In two cases Lucae in repeating the operation did also tenotomy of the tensor tympani, without, however, obtaining any real improvement through it.

Hearing Exercises for Deaf Mutes and for Progressive Hardness of Hearing in Old Age.

Prof. Victor Urbanschitsch. (With comments by Dr. F. Matte.) The method consists, substantially, in the use of the lute and tones in the immediate neighborhood, the lute freely through air conduction or by means of a concave-sided receiver, and the tones, at first singly, then in words and sentences, by means of an improved harmonica of the author's that embraces six octaves (E 1 to C 4.)

It is a well-known fact that with deaf mutes at their entrance into an institute a certain per centage are found to have tone and noise hearing and even word and sentence hearing, and no case is known in which the ability to hear noises without ability to hear tones to a greater or lesser extent has existed. From this it proceeds that a definite relationship exists between the

ability to hear noises and the ability to hear tones. Bezold found in 158 deaf mutes 108 with more or less ability in hearing tones and sounds.

An exact functional examination is necessary to the selection of those cases likely to be benfited by these methodical hearing exercises, as otherwise undue hopes are aroused in the patient, his relatives and the public, which cannot be fulfilled. It has been settled by exact investigations that tone-deaf deaf mutes never can be made to hear speech. They can, of course, be taught by the exercise of their muscles of articulation and through lip-reading, to speak.

Foreign Body in the Eustachian Tube.

CAMERER. (From *Archiv. f. Orenk.* Bd. 40, Ht. 1.) The author gives a review of the published cases in which foreign bodies have penetrated the Eustachian tube from the nasopharynx, external auditory canal or tympanum in which they have wondered in one or another direction or remained in place. In conclusion he presents the following observation from Wagenhäuser's clinic. A boy 6 years of age, with otorrhea of the right side for one year, has lately had frequent hemorrhages from the ear. Canal was filled with inspissated, offensive, brownish, purulent secretion; in the fundus, firm red granulations and posteriorly roughened bone. Further the sound encounters a hard, movable object, which appeared, after extraction, as a $4\frac{1}{2}$ *cm.* by 2 *mm.* piece of straw. Healing occurred shortly through insufflation of boric acid.

Anamnesia: The child had fallen from a wagon one year and a quarter previously, and thereby driven a piece of straw into the mouth, a small piece remaining stuck in the throat was at that time taken out. Swelling of the right side of the throat and otorrhea appeared one month after. A cicatrix existed on the glosso-palatine arch.

In all probability the foreign body had penetrated at this point and then directly or after perforation of the inferior-anterior membranous wall of the tube, through muscular action was worked into the tympanum.

Report of the Proceedings of the Hungarian Otological and Laryngological Society.

L. POLYAK. (*Archiv. für Ohrenh.* Bd. 40. Ht. 1.)

1. Böke—Case of sinus-phlebitis. The case presented

as worthy of notice during life, intact mastoid process insensitive to pressure, whilst the least touch along the entire length of the sterno-cleido mastoid gives rise to the greatest pain; the jugular was easily felt and the size of the little finger. Autopsy: An abscess the size of a nut on the under surface of the right cerebellum was filled with brownish-gray thick pus, the white substance in the neighborhood being softened to the consistency of pap. The tympanum was intact, the inner wall of the sigmoid fossa spongy, in the neighborhood of the jugular foramen a perforation 2 *cm.* wide; the right sigmoid sinus was filled in part with a broken-down, reddish-brown, dirty thrombus, remnants of which were adherent to the wall. Similar changes were also evident in the internal jugular vein. Metastases in the lungs, necrosis of the pleura, bilateral fibrino-purulent pleuritis, parenchymatous degeneration of the liver and kidneys, icterus.

2. Böke—Operative removal of a foreign body in the tympanum.

Report of a case in a child $3\,^1/_2$ years of age in which, through injudicious attempts at removal a fatal result was induced, notwithstanding that B. finally succeeded in extracting the foreign body.

3. Krepuska—Primary Carcinoma of the external auditory canal.

The carcinoma, in a woman 62 years of age, grew upon the left ear from the soil of a chronic eczema. At first granulations, with bloody and purulent discharge, appeared on the cartilaginous portion of the ext. aud. canal. The tumor broke through the anterior inferior bony canal wall and attacked the retro-maxillary region. Later, on attempting extirpation, the inferior canal wall was found almost completely defective, the tumor had extended into the spheno-maxillary region and up to the posterior portion of the naso-pharynx. Finally the tympanum was involved, the hammer being converted into connective tissue, deprived of all bony elements and the tissue filled with carcinomatous pearls; the incus, completely imbedded in the carcinomatous mass, was only carcinomatous here and there on the mucous membrane covering. The origin of the carcinomatous degeneration as shown in the histological investigation, was partly in the excretory duct and partly in the gland proper of the ceruminous glands.

4. Lichtenberg—Case of mastalgia (neuralgia of the mastoid process) with operation and cure.

Reports the cure of an intense neuralgia of the left mastoid process, of three months' duration, in a girl 16 years of age by total extirpation of the mastoid process. The permanence of the cure was confirmed by observations extending over six months. Three months later a similar operation for the same cause was performed on the opposite side.

5. Tompka—Tinnitis aurium perceived objectively.

A characteristic intermittent sound was heard at the distance of 1 *m*. from the right ear of a child 6 years of age, which the author believes was produced through the contraction of the tensor veli palati.

DISEASES OF THE ACCESSORY SINUSES OF THE NOSE, WITH DEMONSTRATION OF SPECIMENS, DRAWINGS AND INSTRUMENTS.*

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IT is not my intention this evening to give you a complete description of the symptomatology and therapeutics of the diseases of the accessory sinuses, a paper which would greatly transgress the limit of the allotted time. and not be suitable for a society like ours. You also will not expect that I can relate to you many new facts, as the subject has already been investigated and described by many authors, and not least by our American confreres. I selected this subject partly because to my knowledge it has not been treated of in our meetings before, partly because the observation is so frequently made, that patients present themselves for treatment, who suffer for months, even years, till they are induced to seek relief. I further intend to show you with the help of some specimens and drawings the way to a correct diagnosis, and enable you thereby, not only to recognize the simpler, less complicated lesions, but also to treat them yourselves. It is a great advantage, if the more obvious affections of these parts are recognized

*Read at a meeting of the German Medical Society of New York, March 2, 1896.

in time, there always will remain a large number of cases, in which it is difficult to determine the locality of the lesion and which will be a severe test to the patience and perseverance of the physician. As the *anatomical relations* are rather complicated and somewhat beyond the limit of our usual work, you will allow me to recall them briefly to your memory, before passing over to the subject proper. I show you first a skull, divided by seven cuts, with an extraordinary development of the accessory sinuses, especially of the frontal and spheroidal sinuses, through whose exits probes are introduced. You can see the whole extent of one maxillary sinus, as the outer wall has been removed. I further brought several specimens with me, which show the ethmoidal cells not visible in the skull, and the accessory sinuses of different configurations and covered with their natural membrane. The three drawings finally, which are suspended on the blackboard and which I have had considerably enlarged, are selected from three atlases and show the different relations the sinuses bear to themselves.

The *etiology* I shall touch upon only briefly, as my paper is principally confined to symptomatology and treatment. Infectious diseases: Measles, scarlatina, typhoid fever, diphtheria, etc., especially influenza, contribute largely to the origin of sinus diseases, which have been more frequently observed during the last few years of epidemic influenza. Traumatism, carious teeth, syphilis, form a predisposing element, also common coryza and sometimes surgical interference.

The *pathological* changes are either a catarrhal affection of the mucous membrane with hyperemia, swelling and secretion of a serous exudat (hydrops), or most frequently a chronic inflammation with purulent secretion. We observe further proliferation of granulations, caries of the bones, also tumors especially in the maxillary sinus, which greatly enhance the difficulty of a diagnosis.

Symptomatology. The diseases of the accessory sinus have a certain number of symptoms common to them all, which will be enumerated first. In many cases the patients'

complaints are very slight, and the diagnosis of the presence of disease can only be made by an exact anamnesis and a careful examination, but generally we notice painful secretions and disturbances of the nervous system. Most frequently we observe headache, and sometimes its seat points to the locality of the affection. The pain is felt in the region of the nose, the forehead, the temporal bone in affections of the maxillary sinus, in the frontal bone, the glabella in such of the frontal sinus. Disease of the spheroidal sinus causes pain in the occipat, such of the ethmoidal cells in the inner part of the orbit, in the temporal region. But the seat of the pain does not allow a positive diagnosis, as the regional lines are not accurately defined, and as several sinuses can be affected at the same time.

Besides headache almost all nervous and mechanial disturbances, which we observe in other nasal troubles, can be present. Of the former may be mentioned vertigo, drowsiness, pressure-sensation in the head, inability, disinclination to work, aprosexia. As a curiosum I refer to the often quoted case of Grünwald, who treated a saloonkeeper for ethmoidal spheroidal empyema. The patient could not tolerate any alcoholica, and had to confine himself to drinking water, but after relief from his disease he was able again to meet all the requirements of his business. The mechanical disturbances are similar to those which we observe in obstructive lesions of the nose, as in hypertrophic rhinitis, pronounced deviation of the septum, polypi; and are due to impeded nasal respiration with its consequences, to which I do not need to refer here any further. In some cases the olfactory sense is lost, in others it is perversed, bad odors are perceived and kakosmia exists. We need not wonder, after what has been said that patients are frequently complaining of throat trouble, but sometimes the stomach also becomes affected, when pus runs from the posterior nares down the throat during sleep. Avellis recently described the case of a patient, who called on him on account of gastric ailments, which were cured by treatment of an accidentally discovered maxillary empyema.

The most morbid symptom found at the examination of the patient is the presence of pus in the nose. The secretion of pus is generally unilateral on account of the more frequent affection of one side only, bilaterally when sinuses of both nostrils are diseased, or when the pus runs through the posterior nares into the other healthy nostril. The secretions can also be permanent or intermittent, the latter when the exit of the sinus is temporarily obstructed, or when the pus seeks an outlet from the overflowing cavity. It is, therefore, in many cases advisable, to change the position of the head, downward or forward or laterally, to make the pus appear in the nostril. Sometimes patients themselves make the observation, that pus flows from their nose when bending the head downwards, which condition greatly strengthens the diagnosis. For chronic formation of pus or with exception of accessory sinus disease is only found in infectious dyscrasic diseases, traumatism, foreign bodies and the like. Of great importance is the locality at which the pus appears, a subject which will be referred to when speaking of the diagnosis. Different symptoms are caused by latent empyemata, which are of rarer occurrence. The pain, especially in empyema of the frontal sinus, is severer, the symptoms and sequelæ are of greater importance. Whilst we have now different means to recognize an empyema of the antrum, and a diagnosis was only made not much over a decade ago, when there appeared a swelling of the face on the corresponding side, when there was protrusion of the inner or anterior wall. In frontal empyema a softening of the bone often occurs and a tumefaction is seen at the inner angle of the orbit. In some cases of ethmoidal empyema the eye is pushed outward, downward, we observe exophthalmus, diplopia, which is the reason that these latter two affections are frequently seen by oculists. Sometimes these empyemata perforate the skin and abscesses form. Frontal and ethmoidal empyemata deserve our fullest attention on account of the importance of the neighboring organs, and several deaths have been reported from extension of the inflammatory process to the cranial cavity from brain abscess.

Diagnosis: The history of the patient well informs us in the majority of cases which side is diseased, as bilateral affections are less frequent and cause ailments in both nostrils. The inspection of the face will reveal swelling, edema, infiltration of the skin, if such are present. When suspecting frontal sinus disease we will exert pressure upon the anterior wall, tap the glabella, a proceeding recently quite warmly recommended. When this manipulation excites pain or increase of the headache in consequence of the inflammatory thickening of the periostema, an affection of the frontal sinus is almost certainly present Examination of the buccal cavity, especially of the teeth, nose and rhinopharynx follows next, after which we will proceed to use translumination. Although the value of translumination has been somewhat overrated, it ought never to be omitted, as a positive result confirms a doubtful diagnosis. Translumination having already been demonstrated before this society I shall not discuss it at length, but wish to draw your attention to a few erroneous conclusions apt to follow its use. In some cases the quantity of pus in the antrum is so small that both sides of the face are equally well transluminated, in others the cavity can by irregular development or growth be so small that it appears dark, although it may not be diseased. Tumors of the maxillary sinus, which are sometimes observed, give the same result. Less satisfaction has been derived, at least in my hands, from transillumination of the frontal sinus.

The most important and constant symptom of all diseases of the accessory sinuses is the presence of pus in the nasal cavity. The pus appears in affection of the maxillary frontal sinus and the anterior ethmoidal cells in the hiatus semilunaris in the middle meatus, often flowing downward and covering the inferior turbinated. These three cavities have their outlet in the semilunar hiatus, viz., the frontal sinus anteriorly, running upward almost perpendicularly, then the anterior ethmoidal cells and posteriorly the maxillary sinus. In affections of the spheroidal sinus and the posterior ethmoidal cells pus is found at the posterior tip

of the middle turbinated and at the septum in the posterior nares, or it appears between the septum and the middle turbinated anteriorly, when it is readily seen at anterior rhinoscopy. There are quite a number of exceptions to this rule, of which I shall enumerate only a few. In frontal sinus disease the pus can burrow through its inferior wall, and also appear between septum and middle turbinates by an accessory opening. Further pus from the maxillary sinus can be forced backward by a hypertrophy of the middle turbinated and presents itself in the choana. Finally, the whole nose can be filled with pus and crusts to such an extent that only a prolonged observation enables us to determine the source of the secretion. The same condition will be found in simultaneous disease of several sinuses.

After having established the presence of pus we ought never to omit an attempt of probing the openings of the different sinuses, which although in the majority of cases difficult, is a great help to diagnosis when successful. We can then see the flow of pus from the exit of the sinus, select curious places, also sometimes inform ourselves about the condition of the sinus itself. We will most frequently succeed in probing the maxillary sinus and can follow it up at once with an exploratory irrigation. Probing of the frontal sinus is more difficult, often necessitating the previous ablation of the middle turbinated. The distance from the anterior nares to the frontal sinus is 7 to 8 *cm.* Probing of the ethmoidal cells from the natural openings is almost impossible, and, if necessary, best accomplished by perforation of the upper wall of the middle meatus with a stiff probe, or by carefully sounding the middle turbinated for detection of caries. The sphenoidal sinus is reached by introduction of the probe between the septum and middle turbinated a little above the latter's lower tip. If the probe is gently pushed back and upward to a depth of not less than 8 *cm.* in males, 7 *cm.* in females, we can assume that we have entered the sphenoidal cavity.

From the foregoing we will generally derive sufficient information to make a diagnosis of the diseased sinus and

to justify us to open it. If, for example, translumination shows one side of the face to be darker than the other, if the teeth are carious, and if pus appears in the middle meatus, we will first attack the maxillary sinus. In ethmoidal disease the condition of the middle turbinated is of great diagnostic importance. The middle turbinated can be hypotrophied, show soft hypertrophies of the mucosa, present cystic enlargement, completely filling the middle meatus, its surface can be smooth or uneven. The latter we see especially when polypi are present in the nose. When the whole turbinated, as it often occurs, is seemingly impregnated with polypi, it can not be denied that they emanate from the ethmoidal cells, and that the thorough cleansing and curetting of the cells is necessary to a permanent cure of the polypi. Some authors go so far as to make the appearance of polypi always dependent from ethmoidal disease, an opinion to which I can convert myself. We can cure many cases of nasal polypi without attacking the ethmoidal cells, which would be impossible if polypi always originated from ethmoidal disease.

I shall not enter at length into a description of the more difficult cases, and only give two examples. Disease of the ethmoidal sinus can exist with a perfectly normal middle turbinated, which greatly enhances the difficulty of diagnosis. Further cases have been reported in which the frontal sinus drained directly into the maxillary sinus. Pus made continuously its appearance in the antrum after it had been opened and cured, till the abnormal communication between the two sinuses was finally found.

The *prognosis* shall be treated of only briefly. In acute cases a few irrigations sometimes effect a cure, and I have succeeded in curing an affection of the antrum this winter with one irrigation only. But such occurrences are an exception, and all chronic cases—and such are by far the majority—need a longer treatment, often extending over months, even one to two years. The prognosis is generally favorable, but, as already mentioned, dangerous symptoms, even death can take place in consequence of disease of the ethmoidal, frontal or sphenoidal sinus.

Treatment: When we have sufficient reasons to believe a sinus diseased we will naturally treat it first before going further. But if we can not decide about the locality of the disease I have always found it best to adopt the method laid down in Moritz Schmidt's excellent text book, by which we successively open one sinus after the other, and which at the same time shows us the way to open and to treat the different cavities. I shall follow here his description in general, but with the large material on hand and the advanced time, enter more fully only into the said operations, which can be made by everybody who knows how to use the rhinoscope and has the necessary instruments. The more difficult and severe operations will only be mentioned briefly, as they require a large instrumentarium and anticipate a complete familiarity with the affections of these parts.

When speaking of the diagnosis, irrigations of the maxillary sinus through the natural opening were already alluded to. If we are unsuccessful it will not be very difficult to perforate the lower meatus with the syringe devised by Moritz Schmidt and to gain access to the cavity in this manner. But the syringe ought to be introduced somewhat farther back, as we are usually inclined to do, because the sinus is reached at the middle of the inferior turbinated, where the bony wall is thinner, when the point is directed slightly upward. The syringe, inserted in this manner, reaches the upper part of the maxillary sinus, but if the antrum is not entirely filled with pus, none will appear at withdrawal of the piston. When we inject thus several syringes full of weak aseptic solutions and push the piston to and fro, the outflowing fluid will become cloudy when pus is present.

Heavier trokars are also recommended for the opening of the maxillary sinus from the inferior meatus, and you see here the trokar of Mimlig and the case of Krause, containing a trokar, a powder-blower and a canula for the frontal sinus. The large opening made by these trokars allows of permanent treatment of the sinus by irrigations, insufflations of powders, etc. But the aperture has a great ten-

dency to contraction, the patient can not well treat himself, curettment, which is often necessary, is almost impossible —reasons which prevented the operation from gaining general favor.

In obstinate, chronic cases it is preferred to make the opening from the alveolar process or through the canine fossa, by both of which methods the lower part of the sinus is reached and drainage materially facilitated. The region of the second molar is generally selected for the alveolar opening and it is quickest effected by a trokar driven by the electric motor. If the teeth are sound and must not be sacrificed, we enter through the canine fossa by incising a fold of mucous membrane and chiseling away the anterior wall of the sinus. The opening thus made can be enlarged to any desirable size; we can thoroughly curett the swollen, degenerated mucous membranes, explore the cavity with the finger, sever existing cicatricial bands and inform ourselves if the sinus is divided by a partition wall into two cavities, as sometimes occurs. This operation is severer than the opening from the alveolar process, and the latter will suffice for the majority of cases. Introduction of iodoform gauze, alternating with irrigations, which the patient soon learns to make himself, insufflation of powders, as dermatol, iodoform, iodol, constitute the after treatment. The wearing of an obturator is recommended when operating through the alveolar process.

If we have reasons to believe the maxillary sinus to be healthy and if pus appears in the middle meatus, we have to decide to open either the frontal or ethmoidal sinus. From what has been said in the chapter on diagnosis, we will generally be able to form an opinion. We will consider on one side the condition and aspect of the middle turbinated, the result of a thorough exploration with the probe, on the other the sensitiveness, pain of the glabella, against pressure, we will also attempt to probe the frontal sinus, if necessary after ablution of part of the middle tubinated. But if in spite of all we should not be able to reach a conclusion, I would prefer to open first the ethmoi-

dal cells, an opinion also shared by our American colleagues, as we observe greater frequency of ethmoidal disease. The continental physicians seem to see a greater number of affections of the frontal sinus and lay more stress upon diseases of the latter. I can not say if this discrepancy is based on actual facts, or if less attention is paid to the frontal sinus here. This latter assumption can not well be accepted, when we consider the zeal and energy shown by our confreres in investigations of accessory sinus diseases. It is perhaps possible, that the greater frequency of ethmoidal affections bears some relations to the greater frequency of intra-nasal diseases on this continent in general, an occurrence which gave rise to the designation "American catarrh."

The opening of the ethmoidal cells is effected by removal of hypertrophies, of polypi of the middle turbinated, by ablution of its anterior part and by thorough curetting of the ethmoidal cells. Curettment has in many cases to be repeated, but not before the reaction, from the first interference has passed off and its result has been ascertained. I may here incidentally mention, that there are colleagues, who, thoroughly familiar with the locality, open the cavity with trephines, only guided by their tactic sense. The further treatment requires frequent irrigations, insufflation of powders, caustics, as chromic acid, trichloracetic acid. I also have seen good results from applications of strong solutions of nitrat of silver, and have by these different means cured several obstinate cases within one or two months.

If we have succeeded in introducing a sound into the frontal sinus—if necessary after the removal of part of middle turbinated—and if pus appears along the course of the probe, no doubt can exist about the disease of the sinus. We will then attempt a cure by irrigation, injections of astringents, also by dry treatment. But as the intra-nasal treatment of the frontal sinus does not promise good results as its probing is seldom successful, the external operation is preferable, as only quite recently emphasized

again by Schech. Of the different methods recommended the least disfiguration is made by a cut through the eyebrows, followed by removal of the wall of the sinus to any desirable extent. Through this opening we can curett the mucous membrane, introduce iodoform gauze and effect a eure within two to three months, often earlier. The exit of the sinus to the nose ought to be explored, if necessary, enlarged.

The opening of the spheroidal sinus is effected in the same manner, as the sound is introduced into the sinus, a manipulation already alluded to. To be successful it will often be necessary to remove parts of the middle turbinated. As the anterior wall of the sinus is in chronic affections generally implicated, becomes fragil, rarefied, its perforation can be accomplished without much force, when we experience the sensation, that the sound has entered a cavity, and that its distal end is more or less movable. I never have experienced in this proceeding as much difficulty, nor do I consider spheroidal disease as dangerous, as some of my colleagues, but generally found a longer time necessary for treatment than in diseases of the other cavities. The general rules laid down in the treatment of the other sinuses are also applicable here.

Gentlemen, I have endeavored to lay before you this complicated subject in a short synopsis, as well as I was able and the short time permitted me. Many interesting points have not been mentioned at all, several have only been alluded to. I did not dwell upon the relationship between ozena and accessory sinus disease, the tumors, the foreign bodies, parasites, the condition of the eye, which is often very important, further, not upon many operative procedures. It is impossible to exhaust a subject in a short paper, about which voluminous books have been written, about whose special parts numerous treatises have appeared. As stated in my initiatory remarks, it was my aim to draw your attention to this class of disease, and my purpose has been accomplished, if I have enabled you, to diagnose and treat these affections more readily, and thereby to be of greater assistance to your patients.

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ABSTRACTS FROM CURRENT RHINOLOGIC AND LARYNGOLOGIC LITERATURE.

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chairman section on otology, rhinology and laryngology, louisiana state medical society; fellow american laryngological, rhinological and otological society; member societe francaise d'otologie, de laryngologie et de rhinologie; vice-president new orleans electric society, etc.

Roentgen's Discovery as Applied to Medicine.

Dr. Henry W. Cattell (*International Medical Mag.*, February, 1896) states that the discovery by Roentgen of Würzburg, of a peculiar form of energy, makes a new era in practical medicine, for we are now able by this process to produce pictures of bones and certain other substances, such as glass, bullets and pins, when covered by the soft tissues of the living body. The process of taking a *skotograph* (okotos, darkness) is as follows: An ordinary photographic plate is introduced into a wooden plate-holder, which is placed upon a firm table. The hand or other object to be skotographed is now rested upon the plate-holder, and a Crookes tube is arranged from 3 to 5 inches above the object, so that the X or cathodic rays fall perpendicularly upon the object. An ordinary Ruhmkorff coil and several cells are sufficient to supply the electrical current, though a higher frequency current is better, as the time of exposure can thus be materially lessened.

Dr. Cattell has seen the first specimens from two post mortems, where an unsuspected jack-stone was lodged in the larynx. As the tissues here are capable of being skotographed by the apparatus already at our command, the laryngologist has a new instrument which he can use for such purpose.

A Case of Salivary Calculus.

Dr. J. G. Harvey (*Medical Fortnightly*, December, 1895) reports a case of a patient who has had for ten years a tumor under the left jaw, caused by swelling of the submaxillary salivary gland. When the patient "takes cold," the tumor would increase in size and become very painful. The tumor was the size of a walnut, and when incised was found to contain a salivary calculus as large as a navy (?) bean. The tumor became reduced in size after this operation, and at the time the report was made was as large as an almond, and painless.

The Cure of Coryza by the Inhalation of Menthol and Chloroform.

Dr. M. Winsche (*Therapeutische Monatshefte*, November 9, 1895,) claims that 10 grammes of chloroform holding in solution 5 to 10 milligrammes of menthol, will arrest a coryza in its early stages, and that this remedy is an excellent prophylactic against influenza.

Four to six drops of the solution are poured into the hollow of one hand; then the two palms are rubbed together, and the vapor which is covered is inhaled through the nose and mouth. Sometimes the coryza is arrested after the first inhalation, but it is recommended to repeat this inhalation once or twice during the day.

It will be remembered that it was Dr. Sotis-Cohen, who in 1872, first recommended the use of chloroform in acute coryza.

The Control of Hemorrhage in "Bleeders."

An editorial in *The Therapeutic Gazette* (January, 1896) calls attention to the method of controlling hemorrhages recommended by Wright of England.

This method is the internal use of calcium chlorid on account of its influence upon coagulation of the blood, it having been proven by Wright to increase the coagulation of blood, not only in animals, but also in man. Thus he has stopped bleeding and increased the coagulation of blood in his own case, and has reported several cases of hemophilia in which good results followed the use of it, even although these cases were hereditary hemophitics.

Those who have had any experience with this unfortunate condition will welcome any method which offers promising results in these cases.

A Case of Cocain Poisoning.

Dr. M. Laaser (*Allg. Med. Central-Zeitung*, 1890-1895) reports the case of a patient suffering from chronic purulent otitis media, in which he syringed the ear per tubam; as the patient complained of severe pains, he afterwards applied 5 drops of a 10 per cent solution of cocain to the red and swollen mucous membrane of the middle ear. At the moment of application, the patient swollowed, and some of the solution passed into his throat.

An half hour later, the author was called to the patient, whom he found in a state of collapse, the pupils dilated and maximum, and not reacting to light, labored respiration, inability to swollow and marked stupor. After the injection of camphor and the use of an emetic, the patient recovered, slept three hours and awoke feeling well. As the amount of cocain used was only one-half grain, Dr. Laaser considers this a case of idiosyncrasy, but warns against the application of cocain to the rapidly absorbing mucous membrane of the middle ear.

Congenital Double Fistula of the Lower Lip Simulating a Supernumary Nose.

Dr. Lewis H. Miller (*Med. Record*, January 18, 1896) after calling attention to the fact that he was able to find only three cases of congenital fistula of the lower lip in the literature of the subject, describes a case occurring in his own practice.

The patient was a young lady, 17 years of age, of German parentage, and aside from the condition in question had a cleft of the soft palate involving two-thirds of the organ with one-half of a uvulva on either side. Otherwise she appeared healthy and well developed. When her mouth was closed, from a habit she had contracted of holding the under lip with the upper incisor teeth, none of the deformity appeared, but as soon as the lip was opened, there was presented in front of the lower incisors what looked like two nostrils, as though a nose by some plastic operation had been placed in the inner side of the lower lip.

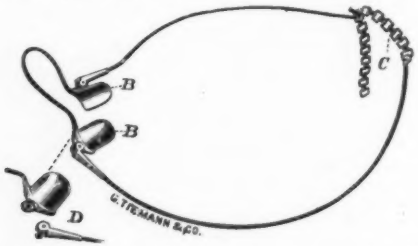
These openings extended down into the thickness of the lip over 2 *cm.*, and were lined with mucous membrane.

To remove the deformity, the author took out a V-shaped piece from the inner wall of each fistula, dissected out the lining membrane, and stitched down the flaps thus formed.

Aside from the rareness of this condition, the case reported is remarkable, that it should have been left undisturbed till adult life.

An Adjustable Self-Retaining Nasal Speculum.

Dr. Sam'l Goldstein (*N. Y. Med. Journal*, February, 1896) describes a new self-retaining speculum, for which he claims lightness, cleanliness, economy and general utility. The general idea of the instrument is shown in the illustration. There is a set of three speculæ, of different sizes, each of which can



be fitted to the spectacle frame by means of a French lock. When one is about to operate, the blades of the speculum are placed in the nostril, and the catch of one portion of the frame is caught in a link of the chain at the back of the patient's head, thus making the speculum self-retaining, and both the operator's hands are free for work.

In What Manner Can Ulcerations of the Nasal Septum Following Operations and in Atrophic Rhinitis be Healed to Secure an Even and Moist Surface?

Dr. Clarence C. Rice (*Medical News*, February 8, 1896) calls attention to the importance of healing nasal ulcerations in such a manner that the cicatricial surface will not accumulate secretions. He advocates the following points:

1. Ulcerations in the nasal septum produced by operative work repair themselves promptly and with an even, moist cicatrix, just in proportion to the degree of general healthfulness of the nasal mucous membrane which exists; much better in hypertrophic than in atrophic conditions.

2. Ulcerations produced by the galvanic-cautery do not heal in so favorable manner as those caused by excision.

3. In healthy nostrils little beyond antiseptic irrigation should be done in the treatment of operative ulcerations until

they are even with the surrounding tissues; then the surface should be (by means of cotton and applicator) *rubbed forcibly* with an appropriate antiseptic stimulant, such as borolyptol or listerin, until the surface of the cicatrix is smooth and moist.

4. This same frictional treatment should be used to heal the mutiple small ulcerations to atrophic rhinitis, and to level and make moist the cartilagenous surface, and so prevent the accumulation of dried secretions.

5. Extreme irritability of the nasal passages, as evinced by paroxysm of sneezing, frequent spasmodic closure of one or both nostrils, abundant transudation of watery fluid, etc., can often be relieved by rubbing the septum and anterior turbinated in the same manner.

A Case of Epithelial Cancer of the Nose of Three Years Standing—Its Treatment and Cure.

Dr. Charles R. Weed (*Medical News*, January 25, 1896) reports a case of epithelioma of the right nasal ala, the growth involving the cheek to within one-quarter of an inch of the internal canthus of the right eye, cured by the application of trichloriacetic acid. The patient was also directed to keep the surface moist with a 2 per cent solution of zinc chlorid. The author believes trichloracetic acid to be the best local caustic, and that the cure was due to this agent.

The Treatment of Sinusitis.

The subject of general discussion at the meeting (May, 1895) of the Vienna Laryngological Society was the treatment of the affections of the accessory sinuses of the nose (*Journal of Laryngology*, January, 1895), Stork, Chiari, Weil, Grossmann and Hajek taking part in the discussion. The general tendency of the discussion was decidedly conservative, Stork going so far as to say that, in view of the unsatisfactory results so far obtained, we ought to operate only when this seems indispensable for the relief of great suffering. Weil also limits his operations to strict necessity, and cures many of his cases of sinusitis by simple pulverizations through the natural openings. He believes that the majority of sinus suppurations are cured spontaneously when a regular outlet for the pus is assured through natural or artificial openings, and pronounces himself against the opinion generally held latterly of radical operation,

and against the early use of the curette, exposing the patient to danger before having made a satisfactory attempt at treatment by simple means.

Chiari has entered the antrum through the canine fossa only three times, operating in his other cases through the alveolus. He irrigates and introduces iodoform gauze strips. The operation through the canine fossa was always followed by great swelling of the cheek, and irrigation and tampooning have been much more painful than through the alveola fistula.

Hajek warns against too great conservatism in the surgery of the accessory sinuses. Even if many of the cases cannot be cured, it is better to make an opening in the maxilla to facilitate the issue of pus than to leave the pus stagnant in the sinus to decompose and produce various accidents.

On the other hand, if the opening through the alveola apophysis is not successful, that through the canine fossa, according to published cases, does not give encouraging results. He has never practiced, in cases of chronic suppuration of the frontal sinus, external trepanation of the sinus, as he does not consider it indicated in cases of this kind. Stenosis of the middle meatus is generally the principle cause of the persistence of suppuration and of the intermittent headache and the treatment should be directed to this locality.

Orbital Cellulitis Produced by a Gunshot Wound of the Frontal Sinus.

Dr. H. D. Schwarschild (*American Medico-Surgical Bulletin*, January 18, 1896) reports a case of a man who, while fishing, felt a stinging sensation in the brow, but was not aware that he had been shot, although a drop of blood appeared upon the spot where he had felt the pain. A severe reaction followed with much cellulitis of the tissues over the eye. To relieve the pressure which endangered the eye a deep incision was made almost the entire length of the lid, and the following day pus made its appearance from the nasal portion of the incision.

A week later, as the general condition improved, and the swelling and chemosis considerably reduced, the traumatic opening into the frontal sinus was enlarged with a mastoid gauze; the cavity being explored a large size bird-shot was found. The subsequent cure was uneventful.

A Safe and Sure Method of Reducing Enlarged Tonsils.

DR. H. H. KENDALL (*The Journal of the Medical Association*, January 4, 1896) believes that in every case of acute or chronic inflammation of the tonsils the salivary secretion will be found acid instead of alkalin, and that free doses of potassium or soda internally and locally applied will give most rapid relief.

An efficient cauterant and at the same time an antiseptic and alterant is pure hydrochloric acid, which Dr. Kendall uses for these cases, by a special method. He uses a capillary glass tube (Bohemian or Whital and Tatum's glass), one-eighth of an inch caliber, heated in a Bunson flame and drawn to a point, the shaft of the drawn part two inches long, and taken off and fire-polished. When the point of this tube touches any substance it will deposit the fraction of a drop; by long contact it will deposit all that it contained.

He dips these tubes into pure fuming hydrocloric acid, and pushes them into the excretory ducts of the tonsils, three in each gland and at each sitting, twice a week. This operation is painless and producing no inflammation or swelling. Five or six applications are sufficient for moderately enlarged tonsils. Nitric acid used in the same way will produce swelling and sloughing. Chronic acid he has abandoned after producing tetamus in a malignant case.

A Case of Fatal Pharyngeal Hemorrhage.

DR. G. E. BREWER reported before the section on Laryngology and Rhinology of the N. Y. Academy of Medicine, a case of fatal pharyngeal hemorrhage (*American Medico-Surgical Bulletin*, January 18, 1896). The patient was a well-developed, vigorous young man, who recently developed symptoms of an ordinary sore throat. An inspection showed some redness and swelling in the region of the left tonsil, and the case was regarded as a mild quinsy. A day or two later, spontaneous rupture occurred followed by a small amount of hemorrhage, and the symptoms subsided. The hemorrhage, however, recurred from time to time. A few days later a severe hemorrhage took place which resulted in syncope. It ceased spontaneously. An inspection of the throat showed that the left tonsil was slightly more swollen than the opposite side, and a small clot of blood was observed adherent to the posterior pillar.

The next morning the nasal cavities were examined and found apparently normal. On the posterior surface of the soft palate was a small granulating surface covered by a firm clot of blood. Every other source of hemorrhage was excluded.

Two hours after the examination, without apparent exciting cause and while the patient was resting quietly in bed, a second hemorrhage occurred, and thirty-six hours later another, both of which were controlled by the peroxid of hydrogen. A pad was now devised by means of which firm pressure was made over the bleeding point. Six hours later, the patient had a fit of coughing, which was followed by a fatal hemorrhage. It is to be regretted that a post mortem examination was not made.

Sudden Death on Opening a Retro-pharyngeal Abscess.

Drs. Levrey and Ghika (*Revue de Med. et de th. inf.*, November, 1895) report a case of a child of six months which suffered from its throat and had difficulty in swallowing for six days. The child was pale, breathed heavily and kept its mouth continually open. The right side of the throat was red and projecting forward, and, by palpitation there could be felt, to the right of the median line, at the level of the arytenoid cartilages, a swelling which fluctuated.

An incision was made in the median line, and a quantity of pus escaped from the nose and mouth of the child whose head had been inclined forward. The child, however, had ceased to breathe and the eyes became fixed.

At the autopsy, no trace of pus could be found in the larynx, trachea or troncheal tubes, and the lungs were in a healthy condition. Death was due to syncope with immediate arrest of respiration.

A Case of Hystero-traumatic Aphonia.

Drs. Bianchi and Massei report a rare case of hysterical aphonia following the extirpation of a tumor from the larynx (*Archiv. ital. d. Laringologie*). A lady 25 years of age applied to Dr. Massei suffering from hoarseness and difficulty of respiration. These symptoms were due to a tumor of the right vocal cord, which neoplasm was removed. Immediately after the operation, the patient became aphonic, which continued for several months. In the meanwhile the tumor developed again to such a degree, that it had again to be removed. The

aphonia, however, persisted after the second operation, although the site of the tumor cicatrized and the vocal cords assumed their normal appearance.

A diagnosis of hystero-traumatic paralysis of the vocal cords was made, although the patient showed no other symptoms of hysteria. After all the ordinary methods of treatment had been exhausted and the condition had persisted for seven months, it was finally decided to try the effects of hypnosis. The patient was easily hypnotized, and while in this condition, the suggestion was made to her to speak in the future in a loud voice. This treatment was successful, and until the time that the report made (five months) the patient had continued to speak in a loud distinct voice.

Congenital Deformity of the Epiglottis.

MEINHARDT SCHMIDT (*Archiv f. Klin. Chirurgie, Deut. Med. Zeit*) reports a case of a child, 10 months of age, which suffered during its lifetime from continued difficulty in respiration. The autopsy showed that the cause of the dyspnoea was the epiglottis, which was distorted. The epiglottis, which was otherwise normally developed, was so bent laterally that the edges were pressed together in the median line, and almost completely occluded the *Aditus laryngis*. The only openings into the larynx were two small apertures, one at the anterior and the other near the posterior part of the epiglottis.

Intubation in Paralytic Laryngeal Stenosis.

DR. J. O. DWYER (*N. Y. Med. Journal*, December 28, 1895) states that excision of the vocal cords, or any portion of them for paralysis of both abductors, is worse than useless, unless this operation is immediately followed by intubation, because the tissue removed is soon replaced by new tissue, which in time controls, thus converting a simple valvular obstruction to inspiration into a cicatricial one.

To produce a permanent breathing channel through the larynx in incurable paralysis of both abductors, a simple incision through the cord, which destroys the valve, followed by the wearing of a cylindrical intubation tube until the incised cord has healed in the retracting position, is all that is required.

Before pronouncing a case of double abductive paralysis incurable it would be well to try long continued intubation with a cylindrical tube before resorting to more radical methods, because some of these cases prove curable even after having existed a long time and resisting all the ordinary methods of treatment.

Tubes for the treatment of such cases should be constructed of hard rubber, which are not subject to calcareous deposits, which occur in all forms of metalic tubes.

The ordinary intubation tube suitable for the patient's age, is held in the larynx solely by contraction of the vocal cords, and when this power is lost, by paralysis or otherwise, it must be transferred to the cricoid cartilage by increasing the retaining swell.

Some Avoidable Accidents of Intubation.

Dr. George F. Cott (*Medical and Surgical Reporter*, January 25, 1896) in an experience of forty cases of intubation, has had some uncommon accidents, which has given him valuable experience. He has had the patient to stop breathing and revived him by artificial respiration; has been obliged to do tracheotomy within half an hour after the tube was extracted and the little patient died on the table; has had the tube obstructed one-half hour after its introduction, necessitating its extraction; has had the tube coughed up and death follow before aid could be rendered; has had three tubes coughed up immediately after introduction, so that he was forced to perform tracheotomy; has lost tubes during an effort at extraction, and "lost the patients too."

He then reports a case of the last-mentioned accident. A child 13 months of age, almost moribund with diphtheria, was intubated. Five days later the child appeared sufficiently improved, extraction was attempted. The extractor, however, slipped and the tube disappeared and could not be found. Three times preparations were made to tracheotomize the patient to find the tube, but as no symptoms developed, it was deferred. Four weeks later, the autopsy revealed this tube in the bronchus, through whose left branches it had evidently ulcerated.

The author recommends the use of Dr. Lewenthal's extractor, and advises that the thread be not removed unless the operator is expert in extracting the tube.

The Etiology of Ulcers of the Larynx in Typhoid Fever.

DR. PAUL BERGENGRUEN (*Archiv. f. Laryngologie*) calls attention to the surprising difference in the reports of the published cases of laryngeal complication in typhoid fever. While some writers give a percentage of over 30, others find less than 2 per cent of this complication. Schroetter, who for four years made a careful laryngoscopical examination of every case of typhoid fever in the Rudolf's Hospital in Vienna, found only 3 per cent of the cases suffering from a laryngeal complication.

The writer then gives the clinical history of a case of this complication. A sailor, 24 years of age, with typhoid fever, developed on the tenth day hoarseness and severe nose-bleeding. On the thirteenth day the respiration was impeded, the voice still hoarse and much mucus expectorated. On the fourteenth day the respiration was stenotic and the stridor was marked. A laryngoscopic examination showed swelling of the epiglottis, and the arytenoid cartilages covered with tenacious mucus. A low tracheotomy was performed, but the respiration still remained stridulous and two hours afterwards the patient died, the face being strongly cyanosed.

The autopsy showed the mucous membrane of the larynx in the region of the arytenoid cartilages markedly oedematus; both vocal cords were almost entirely destroyed by well-defined deep ulcers; the ulcerated region covered by a gray, pulpy malodorous mass.

From a careful study of the case, he concludes that this laryngeal complication is not due to decubitus, but to a secondary infection of the larynx as advocated by Rokitansky.

Bilateral Abductor Paralysis of the Vocal Bands.

DR. C. W. HARTWIG (*Presbyterian Eye, Ear and Throat Charity Hospital Reports*, January, 1896) reports a case of bilateral abductor paralysis, which shows the importance of an early positive diagnosis and prompt surgical interference.

The patient applied to the hospital, suffering from labored respiration and marked inspiratory stridor. The laryngoscope revealed absolute paralysis of the left vocal band in adduction, and the right band moved but slightly, and on inspiration the bands were brought in opposition, which completely closed the glottis.

Immediate operation was advised, but for some reason it was postponed. Four days later the author was hastily summoned to the ward by the nurse, who stated that the man was dying. An attempt was made to bring him to the operating room, but when the next ward was reached the patient fell over a bed, ceased breathing and became unconscious. Dr. Hartwig ran to the operating room and returned with a scalpel and a pair of scissors, drew the head of the patient over the side of the bed and plunged the knife into the trachea just below the isthmus, and enlarged the opening with the scissors; then, with the scissors and finger separating the opening, he was turned over on his side to prevent the blood trickling into the larynx. Artificial respiration was resorted to, after which the canula was inserted. The patient gradually recovered. He improved under antisyphilitic treatment, but still wears the canula.

A Case of Papillomata of the Larynx Cured by Application of Absolute Alcohol.

Dr. Delevan reported before the section on Laryngology and Rhinology of the New York Academy of Medicine a case of multiple papillomata of the larynx cured by the application of absolute alcohol (*American Medico-Surgical Bulletin*, January 18, 1896). A spray of alcohol was applied by the patient herself six times daily, and in a very short time improvement was noticeable. The voice improved, the growths shrunk in size and several papillomatus masses came away. This treatment was continued for five months, when no trace of papillomata could be found. The author suggests that this treatment also gives us a method of differentiating between a small papilloma and a malignant growth of the larynx.

Diffuse Papillomatus Hypertrophy of the Laryngeal Mucosa.

Dr. A. A. Kanthack (*Journal of Laryngology*, January, 1896) exhibited before the Laryngological Society of London the larynx of a child that had died suddenly of asphyxia. The aditus laryngis was completely blocked by a dense papillomatous growth which filled up the whole of the larynx. The growth extended not only below the cords as far as the lower border of the cricoid, but even lower down, just below the tracheotomy wound (tracheotomy being done too late to save the child), a

few small warty growths could be seen. Microscopically, the growths were found to be papillomatus and lined by a thick layer of squamous epithelium.

The Occurrence of Goiter Among the Indians of the United States.

Dr. Edward L. Munson has made a collective study of the occurrence of goiter among the Indians of the United States (New York *Medical Journal*, October 26, 1895). With a view of determining a possible race predisposition to this disease, a series of twenty-five questions, bearing on this affection in all its phases, was sent to the Indian Service physicians at each of the sixty-three agencies, and full reports were received in all but three instances.

The conclusions which Dr. Munson has reached from a study of these reports are as follows:

There is a strong racial predisposition to goiter among the Indians.

Goiter is distinctly a localized disease.

Goiter does not appear to be caused by high altitudes, climate or water containing an excess of calcarious salts.

This disease appears to be favored by unsanitary surroundings, depressing constitutional conditions, and an excessively nitrogenous diet.

Hereditary influence is a prominent factor in the causation of this disease.

Sex and puberty exert a strong influence in its production, and there appears to be an intimate relationship in women between the thyroid gland and the reproductive organs.

Cretenism is extremely rare in connection with this disease and exophthalmic goiter moderately so.

The tumor is correspondingly smaller than among the whites, and localities apparently affect the growth as well as its frequency.

The usual treatment is unsatisfactory.

A Chemical and Experimental Research in "Antiphthisin" (Kleb's).

Drs. E. L. Trudeau and E. R. Baldwin (*Medical Record*, December, 1895) call attention to a communication made in

1892 by Kleb, in which he claims, by chemical methods which he describes, to have separated from tuberculin, and later from the filtrate of over-ripe liquid cultures, a product, which, owing to its specific germiadal action, is capable of killing the tubercle bacillus, even when entrenched in the living tissues of infected men and animals, and thus curing the disease.

According to Kleb's observations the cure is brought about, not as Koch thought, by the power of the specific product to incite a reactionary effect in the part of the body cells, but directly and solely through its germicidal effort in the tubercle bacillus.

After a minute detail of the chemical and experimental research which the authors made of "antiphthisin" they formulated the following conclusions:

1. The substance made according to Kleb's published method, and called by him "antiphthisin," resembles deutero-albumoses in its chemical reactions and can be precipitated by sodium-bismuth-iodid. Hence it has no peculiarity of behavior to that reagent to distinguish it, and as similar substances can be obtained from unplanted bouillon, it cannot be considered an altogether specific product of the tubercle bacillus.

"Antiphthisin," prepared according to Kleb's published method, is practically highly diluted tuberculin, and its physiological effect on animals in sufficient doses is the same as tuberculin.

2. "Antipthisin" possesses, under the conditions stated above in germicidal power in the tubercle bacillus which can be demonstrated *in vitreo*.

3. When applied to animals, as stated above, neither "tuberculocidin" nor "antiphthisin" had any curative influence over the course of experimental tuberculosis in the guinea pig.

4. Since cultures of the tubercule bacillus become acid as they grow, and, furthermore, since the addition without heat of a little alkali to the filtered culture medium upon which the bacilli have ceased to grow, renders it again fit for the development of a second crop of germs so long as any nutriment remains, it may be inferred that the limitation of the growth of the tubercle bacillus in such a culture is most likely due to the acidity induced in the medium, rather than to any specific germiadal substance produced therein.

A Case of Malignant Interbronchial Growth.

Dr. J. G. Adams (Montreal *Medical Journal*, January, 1896) reports a case of malignant interbronchial growth, associated with a misleading train of symptoms. The patient, a woman 50 years of age, was seen one year before death, and presented the physical signs of tuberculosis of the right apex. Six months afterwards the patient again applied to the hospital, when it was found that the conditions had become aggravated, and a provisional diagnosis was made of pulmonary phthisis, with cavitation of the right apex and hæmoptysis, and with general tuberculosis of the right lung. The sputum appears not to have been examined, as no reference is made to this.

At the autopsy the diagnosis was found to be erroneous. Upon dissecting the main bronchus there was found at the point of division with the right bronchi for the three lobes of the right lung a dirty gray rounded mass with ulcerous extremities, almost completely filling the lumen. Upon further dissection a large, soft, flesh-colored tumor was seen lying in a sac made up of the dilated bronchus of the collapsed lower lobe.

The tumor was 7.5 *cm.* long by 5.3 *cm.* across, and microscopically was found to be a sarcoma of the bronchial wall.

THE TREATMENT OF HYPERTROPHIC RHINITIS BY THE BIPOLAR METHOD OF ELECTROLYSIS.

By W. Scheppegrell, A. M., M. D.,
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Vice-President of New Orleans Electric Society.

Translated from La Revue Internationale de Rhinologie, Otologie and Laryngologie.

In September, 1892, I published an article in the New Orleans *Medical and Surgical Journal* entitled, "The Treatment of Hypertrophic Rhinitis by Electrolysis." This new method of treating this disease caused considerable comment at the time, and I received inquiries as to the details of its application from various parts of Europe and America.

Up to the time of the publication of this article I had made use only of the uni-polar method of applying electrolysis in this disease, and, while a longer experience has convinced me of the advantages of using electrolysis, it has also more clearly shown me some of the disadvantages of the mono-polar method.

In hypertrophic rhinitis the object of the treatment is the reduction of the hyperplasia, so as to restore the normal respiratory passage through the nostrils. Cocain, by contracting the blood vessels, causes a temporary collapse of the tissues; but, unfortunately, this effect continues but a short time, being followed by a marked dilation of the blood vessels, so that the continued use of this medicament soon aggravates the condition for which it was first used. There are probably few rhinologists who now use cocain for this condition, but I have the

record of a number of cases in which the patients, by advice of their physicians, used cocain for hypertrophic and congested conditions of the mucous membrane of the nose, resulting in marked aggravation of the existing nasal disease.

Among the agents now used for the reduction of hypertrophic rhinitis are the electro-cautery, chromic acid and trichloracetic acid. Of these the electro-cautery is, without doubt, the most practicable and efficient. One of the objections to chromic acid, which I have not seen referred to, and which I have frequently observed in my practice is, that it gives rise to considerable pain. If the parts are well anesthetized with cocain there is, of course, no pain in the application of the caustic, but after the effects of the cocain have passed off, those of my patients on whom I had used chromic acid have very frequently complained of pain, more or less severe, lasting from one to several hours, sometimes involving the whole side of the face and eye. This was, undoubtedly, due to the chromic acid, although an alkalin solution had been used afterwards to neutralize the acid. With the electro-cautery or electrolysis any after pain is rarely complained of.

One objection, however, which applies alike to the electro-cautery, chromic and trichloracetic acids, is the formation of a cicatrix. In other parts of the body less important in their physiological functions the surgeon used every device to avoid the formation of a scar, while the rhinologist boldly inflicts one in the nose of every patient who is suffering from a hypertropic or even only a congested condition of the mucous membrane of the nose. In fact, I have seen the cautery applied so recklessly in some of these cases that but little of the normal mucous membrane could be seen in the nostril. In a dilated condition of the mucous membrane of the nose we attempt to remedy the condition by establishing a cicatrix, which we know by experience in other parts of the body is more yielding than the normal mucous membrane. No doubt this is an important element in the frequent relapses of *rhinitis hypertrophica* and *intumescens*.

In using electrolysis, the object is to reduce the hypertroplasia and break up the net work of dilated blood vessels as with the electro-cautery, but to effect this by means of a submucous operation. Theoretically this is, of course, the ideal operation in all cases, although practically there are some cases

in which we have to resort to other methods. From an experience of over four years with electrolysis, I can affirm that in those cases in which it can be carried out, especially by the bi-polar method, the results are more satisfactory and more lasting than with any other procedure which I have used. In recommending, therefore, this measure in rhinology, I shall endeavor to point out the conditions and cases in which I have found it most effective.

As regards the modus operandi I will first refer to what I have used in the mono-polar method and then point out the changes required for using the bi-polar method.

For electrolysis the galvanic current is required, the faradic (induced) not possessing the required electro-chemical properties. A current of thirty-five volts will answer the requirements, which may be obtained either from a chemical battery, as for instance twenty-four cells of a Law battery or other sal-ammoniac battery, or from the wires of an incandescent lamp circuit, using the Edison current of not more than 120 volts. The alternating current should never be used, not only on account of the danger to which the patient would be exposed, but because like the faradic, it does not possess the required electrolytic properties.

If a chemical battery be used a selector will be found the most efficient, while with the Edison incandescent lamp current a resistance as a water or carbon rheostat should be used.

In applying electrolysis a milliampere-meter should be used, so that the strength of the current may be noted.

In using the mono-polar method the platinum needle was passed into the hypertrophied tissues, while a dispersing electrode was applied to the back of the neck or to the chest. While the results of the mono-polar method were, in the main, good, a longer experience with its use taught me that it was open to the following objections:

1. There is frequently experienced a burning sensation at the dispersing electrode, which, to many patients, is very unpleasant. This objection could be overcome by the use of larger dispersing electrodes.

2. As the current must traverse a considerable portion of the face and head in passing from the needle to the dispersing electrode, there are frequently felt disagreeable sensations along these points.

3. On account of the great resistance which the distance between the active and the dispersing electrodes forms to the current, there is a great waste of electro-motive force, and the current has to be applied a considerable length of time to effect the electrolization of the tissues around the platinum needle.

With a view of obviating these objections in a method of treatment which had given me some excellent results, I commenced about two years ago to apply electrolysis by the bi-polar method—that is, by using two needles in the hypertrophied tissues, the one being connected with the positive and the other with the negative pole of the battery. The passage of a current of electricity through these needles causes the electrolization, or chemical decomposition, of the tissues between them, hydrogen being eliminated at the negative needle and oxygen at the positive. As nascent oxygen combines rapidly with most metals, platinum must be used for the positive side, but for greater convenience and to avoid testing the current each time that it is applied, I make use of platinum needles for both the positive and the negative sides.

On account of the proximity of the needles to each other there is a great reduction in the resistance to the current of electricity as compared to the mono-polar method, so that a current of less strength will effect the same work, or the same current that was used in the mono-polar method will act much more effectively. Not only is this the case, but as both needles are imbedded in the tissues between them, so that the operation may be effected much more rapidly. While with the mono-polar method, a case required 15 to 30 minutes, I can now by the bi-polar method, do the same operation more effectively in from 2 to 5 minutes. Another advantage is that, as the current traverses only the tissues between the two needles, which parts can be thoroughly cocainized, the operation can be effected without pain.

In applying the bi-polar method of electrolysis, I would call your attention to a few points to be observed. The nostril should first be *rapidly* cocainized, anticipating, as far as possible the collapse of the tissues which renders it more difficult to insert the needles. The platinum needles should be fine and well pointed, and the greatest care be exercised that the uninsulated parts of the needles do not come in contact within the tissues or elsewhere.

The needle and holder which I use consist simply of a light but sufficiently strong piece of copper wire, to one end of which the platinum needle is soldered, and to the other end of which is attached a small binding post. The copper wire is covered with a thin piece of rubber tubing, which may be taken off for the proper disinfection of the instrument. The part of the platinum needle near the holder is insulated by means of a little shellac varnish. The insulated cords attached to the binding posts should be as light as possible, as a very thin cable is sufficient to carry the current for this purpose, and is more convenient to handle.

The nostrils being thoroughly illuminated by the reflected light from the forehead mirror, and the alæ well dilated by the nasal speculum, the first needle is passed into the upper part of the hypertrophy, and the second needle into the lower part. A current of sufficient strength is then gradually admitted by means of the rheostat. I have found that while a current of five milliamperes was painful when used by the mono-polar method, twenty milliamperes could easily be borne in the bi-polar method. From 2 to 5 minutes is usually all the time that is required to effect the required electrolization of the tissues.

An experience of over one hundred cases with the bi-polar method of electrolization, enables me to deduce the following points:

A. As compared to the bi-polar method.

1. It is more rapid in its application.
2. Less painful to the patient.
3. More definite in its action.

B. As compared to other methods.

1. It is a more conservative operation as it effects the destruction of the tissues without destroying the mucous membrane and its glandular elements.
2. It is not more painful to the patient and but little more difficult to the skilled operator. It has not the disagreeable after pain following the application of chromic acid.
3. Being a submucous operation, the reaction following it is very slight, as the electrolized tissues are frequently absorbed instead of sloughing off as in other methods.
4. The probabilities of a relapse are much less than in other cases. I have never yet seen a synechia formed in the nostril due to the effects of electrolization.

Besides the direct effect due to the electrolization of the tissues, there is evidently some other beneficial influence in this mode of applying electricity, which is not yet well understood. The electric force passing between two points does not extend across this distance only in a straight line but also in curves which extend in every direction between the two poles. The greater portion of the electro-motive force passes in a more direct line causing the electro-chemical destruction of the intervening tissues, but the outside curves of electro-motive force, of moderate intensity, exercise some tonic effect on the surrounding tissues, blood-vessels and nerves, to which some of the good effects of this operation must be attributed.

The cases in which the electrolytic method is not practicable may be summed up as follows:

A. As the operation is not performed as rapidly as by means of the galvano-cautery, it is not so practicable in cases of young children or very nervous patients.

B. The physical conformation of some nostrils render it difficult to properly insert the electrolytic needles, and in these cases some other method must be adopted.

In submitting this communication before the Societe Francaise d'Otologie; de Laryngologie et de Rhinologie, a society which numbers among its members many of the most celebrated aurists and laryngologists, I would request my honored confreres to test the bi-polar method of electrolization in some of their cases of hypertrophic rhinitis, trusting that the light of further experience and observation will give this method its proper place as a surgical procedure in rhinology.

New Orleans, March 22, 1895.

THE FADS AND FASHIONS OF SURGERY.*

By S. O. Richey, M. D.,
of Washington, D. C.

As late as the middle of the eighteenth century, the regimental surgeon in the Prussian army shaved, as part of his duty, the officers of his regiment. To-day, if that were the only way in which an officer could be shaved, it would be a military fashion to wear long beards. Though knowledge has lifted the surgeon among our cousins across the water above his early associations, the company of barbers, to approximate rank with the physician, he is not even now distinguished with an academic degree. In America no entangling alliances of this kind have existed, to be shaken off, for the requirement of a new and sparsely settled country that the practice of medicine and surgery be united in one individual has identified surgery with medicine, and has included both in an academic degree, the least of its advantages; the requisite qualification being the greatest—wisdom in counseling an operation and the ability to do it. This brings us to a question of large dimensions, which I shall not attempt to answer. For the ultimate welfare of the client are these functions better exercised by *two* individuals, or are they better united in one person?

The latitude of this paper denying an exhaustive treatment of such a question, your attention is asked to the consideration of one which arises in a development of our environment, and which may be changed only by slowly changing conditions. The American surgeon has contributed not less than his just part to the growth in the knowledge and technique of our science, but are we not in need of the conservative mind to save to us the respect we possess?

*Read in the Medical Society of the District of Columbia, February 12, 1896.

Knowledge *and* experience in the same person commonly result in a conservative mind. What has been called "the intuition of experience" is a valuable possession. Enthusiasm and enterprise are also admirable qualities, and when combined with ambition and energy, are essential to the work and progress of the world, but they are best without an element of rashness, which is incompatible with *scientific methods*. That mind is not fitted for our own profession which is without a sense of personal responsibility, and which is not qualified to put in practice those measures which are best for the constitutions entrusted almost absolutely to its care; not what is best for the interruption of the immediate discomfort and its symptoms, but what will have the most beneficial, and the least deleterious, influence upon both the present and the future of the life. *Moral* responsibility does not cease with the discontinuance of medical (or surgical) attendance for the present affection, but involves the remote influence of what is done and what is omitted. This sense may often embarrass its possessor, but it wins confidence and promotes obedience to the "golden rule."

We are a restless and impatient people, and our rapid growth is both dependent upon and a cause of our restlessness. A science must be actually of slow growth; ours above all others demands patient plodding and perseverance. Its field, during the twenty and more centuries through which the art of healing has been practiced, has been worked over again and again. Some minds do not realize that "there is no high road to fame," and with a desire for notoriety, fostered from the cradle in this era, any device with which a name may be connected, from a modified obstetric forceps to a pseudo anti-toxin for tuberculosis, is seized upon and exploited for its gratification. This fact is illustrated by the catalogues of instrument makers and of manufacturing apothecaries, in which instruments and formulæ are so distinguished, and by the indorsements of certain waters and proprietary combinations.

To this class of performances belong also a number of *nagging* operations, some possessing the possibility of benefit; some, not only irritating and irrational, but positively harmful through the trepidation they cause, if in no other way. The intention of devising an operation is not at all questioned, but the persistence in its practice after observation and experience have shown it to be of doubtful value, and by those less wise than the

originator. A minor mischief arising from such proceeding is the reproach which it brings, not only upon the surgeon who practices it, but upon surgery as a science. Does any man hold that the surgery of America commands more esteem for the recent and widespread *fashion* of castrating women for any and every kind of reason? Was that conservative surgery? What did it save?

When such a proceeding is the fashion it requires the support of his knowledge that he is doing right to enable one to resist the temptation to do as his fellows do, and thus avoid criticism. In a chronic affection the sufferer's patience grows threadbare, and he becomes irksome to his adviser, who, in the *hope* of speedy relief to his client, and in the *fear* that another may operate, and with success, if he does not, allows himself to follow a fashion against his better judgment—*to do what he would not have done to one of his own.* Intelligent laymen are not long in learning to sneer, as we have heard them do at the operation of circumcision, that for appendicitis, at ocular tenotomy, tonsillotomy, "clearing out the nose," excision of the drumhead, etc., as we never hear them do at operation for ovarian tumor, for hernia, at trephination, or extraction of cataract. They jeer at an operation because fashion has belittled it, and *they* make our clientage.

This paper will not discuss the operations in any field save that to which the writer has given special study, and which he deems of first importance, because it is the area of four of the five special senses.

There are exceptions of emergency to what follows, as *any* operation may have its use. Objection is raised to the routine practices of the day.

Many reasons exist for operation, among which we *must* conclude that the *welfare of the patient* stands first, as few individuals receive such a suggestion without aversion, no matter how slight the operation may be, and submit only when convinced that relief can be secured in that, and in no other way. Next, the element of expectation, which is nearly removed from the mind of the surgeon by asepsis and antisepsis; ambition to be known as an operator; the impression that it is best because others do it; the question of compensation is excluded by the fact that more operations are done in charity than otherwise. In 1890, at New London, a prominent specialist said to me with

a smile: "——'s operation is a good one; he has just received $1,300 for it."

Surgery has never been so conservative as it is to-day, and never has it shown so little conservatism as in the past fifteen years, during which knowledge, care, cleanliness, antisepsis and anesthesia (local and general) have reduced to an inconsiderable percentage the danger to life. Probably, on account of the reduced pain and risk, the disposition to operate in the region of the trigeminus, where the proceedings are with some exceptions comparatively bloodless, has grown reckless, and that upon tissues exquisitely adapted to special function which even a cicatrix may mar. That there is more snipping in this region than meets with general approval is shown by a rising wave of protest which is appearing in the literature and society discussions;[1] let us hope it will not develop into *reaction*. There is a golden mean which *fashion* never observes.

To condemn a measure, until its devisers and advocates have had a fair hearing, or until its effect, as compared with other means, has been shown by experience, is unwise. But usually there is "the other side," which should be heard *sometime*, especially in face of a growing reluctance to such constant cutting.

Tonsillotomy. The importance of an enlarged faucial tonsil is very much exaggerated. Occurring as a chronic process, while in intercurrent attacks of croup, bronchitis, or one of the exanthemata, it may prove serious, yet excision, save in emergency, is of questionable wisdom, as it can be reduced by proper management,[2] and time is afforded for this by the chronicity of the condition. This is accomplished by treating the disease-process instead of merely removing the redundant tissue and leaving the disease to reproduce it. In adolescents the re-

[1] This paper was written a year ago; no time was assigned for its reading.

The discussions at the meeting of the American Medical Association in Baltimore last May demonstrate the rapid growth of dissent.

[2] Dr. H. W. Kendall, Quincy, Ill., (*Journal American Medical Association*, January, 1896,) A Safe and Sure Method of Reducing Enlarged Tonsils, recommends the use of pure hydrochloric acid, a drop being introduced into the secretory ducts (into each of the three) by means of a capillary glass tube, twice a week. He claims it to be painless and that half a dozen applications will reduce a moderately enlarged gland, and thinks "tonsils ought never to be removed with knife or scissors."

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currence of the enlargement is seen, after excision; the organ so large sometimes as to extend to the median line, always above and below its normal limits, in which directions the ordinary form of ablation does not diminish the growth. But for the change of shape, the loss of the rounded surface, and the exposure of the lacuna, it would not be easy to realize that the tonsil had ever been reduced.

The effect of an excision may be attributed to three causes: The loss of tissue, the local depletion, and the subsequent cicatricial contraction; all of which is overcome by the persisting hyper-nutritive process, unless the period at which atrophy begins is reached too soon. As a deduction from the observation that tonsillar hypertrophy more commonly occurs in children fed by hand, the cause is probably constitutional; abnormal digestive or metabolic processes, and the removal of proliferated tissue will not cure these.

Applications to the external surface of the gland serve no purpose whatever, but by the use of proper agents in the crypts, injected gently, or passed through the orifices on a cotton-holder, the organ will gradually shrink, until the age of atrophy, which possibility should not be overlooked. Silver nitrat, to promote constructive metamorphosis; kali permanganat, to excite active oxidation; salicylic acid, to neutralize morbid and irritating deposits; each used in proper form and strength is antiseptic, and two of them are astringent. Tonsillotomy in emergency is necessary. As a routine practice, as in the case of those who have excised "their peck of tonsils," it is needless mutilation. The true reason for such practice is that the surgeon finds it a quick and easy way to dispose of an organ which he does not understand; after the manner of Herophilus, some hundreds of years B. C., who hacked at the liver and spleen which he judged "to be useless to the animal economy." God save the mark! Is it not wiser to stand with our hats off in the presence of a mystery we can not solve, than to attack it boldly with a knife? The tonsil has, or has had, some function. Until we know what that is, who can call the mutilation harmless?

Some years ago, a vivacious woman remarked to me that when she went into the office of a colleague, who did this operation whenever circumstances permitted, she "always raised her skirts and tip-toed across the floor for fear of stepping on one

of the horrid things." It may be impossible to avoid such jeering; if so, it is unfortunate.

Excision and cautery of hypertrophied turbinated bodies occurs more frequently than is justified. The hypertrophy is often the first stage of a process which ends in atrophy, the final action frequently having begun at the time of interference, and before superficial hypertrophy has ceased. Operation must accentuate the final condition. It *may* relieve the immediate discomfort, but it *adds* a cicatrix which collects the secretions, causing increased and never-ending annoyance.

The anatomy and the physiological functions of the nasal cavity, give us rational indications; the free passage of inspired air to be warmed by its vast area of mucous membrane overlaying plexuses of blood-vessels, constituting "corpora cavernosa," and to be supplied with moisture before passing through the deeper respiratory passages. The most pronounced direction of the normal current of inspired air, according to Aschenbrandt,[3] R. Kayser,[4] E. Bloch[5] and E. Paulsen,[6] is through the upper straight. Paulsen made the first experimental investigation, from which he concludes, that in inspiration "the bulk of air takes an upward course, rises to the bridge of the nose, passes along the roof of the nasal cavities until it reaches the posterior portion when it again descends along a curved route." The lower nasal passage is not touched by the current of air, for "the inferior border of this current extends at no point beyond the middle of the lower turbinated body." Kayser's experiment with powdered magnesia shows that "when tried upon a fairly normal nose in the living, rhinoscopy will reveal the following surprising picture: A more or less dense layer of white is seen at the anterior extremity of the septum, and about 1.5 *cm.* from the point of the nose at the level of the middle or upper portion of the inferior turbinated body. Thence, the white powder extends along the septum describing a semi-circle from before backward. The lower passage, the floor, and the lower border of the inferior turbinated body are entirely free from the powder; on the upper surface and the anterior extremity of the inferior turbinated body there

[3] Die Bedeutung der Nase für die Athmung. Wurzburg, 1886.
[4] Pflueger's Arch. f. d. ges. Physiol. Bd. XLI., 1887.
[5] *Archiv. Otol.*, No. 4, Vol. XVII., 1889.
[6] Sitzungsb. der K. Akad. der Wissensch., April 1882.

are a few grains. The anterior vertical border of the middle turbinated body is thickly covered, also its lower border, and the lateral walls of the middle passage are well covered. Above the middle turbinated body as far as it is possible to observe, there is powder, especially upon the septum. Posterior rhinoscopy shows some powder upon the upper part of the posterior pharyngeal wall; it is only with the production of very dense clouds of dust that, under normal circumstances, the deposit of powder upon the posterior wall of the pharynx extends to the lower part opposite the lower nasal passage. Modifications of this picture depend upon the structure of the interior of the nose."

Bloch, of Freiburg, reached the conclusions that "inspired air, in its passage through the nose, gains in heat five-ninths of the difference between its temperature and that of the body; that the air at an average temperature would pass into the pharyngeal cavity through the nose only two-thirds saturated; that small solid particles inspired are in great part retained by the nose, but the nose is not capable of freeing entirely the inspired air of impurities, even with the aid of the naso-pharyngeal cavity."

The arteries, which supply the lining membrane of the nasal fossæ, the ethmoidal cells, and the frontal sinuses, are branches of the ophthalmic and spheno-palatine arteries. They enter the nasal cavity far back in the upper straight, and it may be seen that engorgement of the blood-vessels, or a slight redundancy of tissue, in this space will greatly embarrass breathing, diminish nasal resonance and contribute to overfulness of the plexuses of the turbinated bodies, both directly and indirectly. The radical arteries and veins pass side by side, through foramina into the nose. When arterial dilatation takes place by direct blood pressure from the vascular centers, or as a reflex engorgement from irritation of the intra-nasal nerve endings, the arteries, by pressure, diminish the caliber of the veins at the foramina, check the reflux of blood, cause venous stasis of the nasal contents, obstruction of the mucous gland openings, with consequent cellular infiltration of the intra-nasal tissues, favoring fibrosis, intra-nasal hypertrophy.

In this extremely delicate space of the upper straight, requiring the most careful manipulation to reach it with instruments, the conservative work of the surgeon must be done. Sprays

may reach it, but are evanescent in effect, as they are promptly removed by the abundant secretion excited by their presence.[7] A 4 per cent solution of cocain, applied here with gentleness and care, causes contraction of the arterial vessels, thus reducing the *influx* of blood; removes their pressure upon the sinuses, thus permitting *efflux* of blood; the gland openings are freed by this influence, and the tissues are further depleted by its effect in unloading the local blood supply of its water. Active circulation is thus promoted in all the intra-nasal tissues, lessening the tendency to connective tissue hyperplasia and encouraging the resorpation of infiltrated material. The quickly passing effect of cocain calls for reinforcement by an agent capable of a more sustained impression, and my experience has fixed upon silver nitrat solution, 2 to 10 per cent, saturated with boric acid, as the most effective in increasing the effect of cocain, and in preventing reaction. It should be applied by means of the cotton-holder, like the cocain which has preceded it ten minutes, the necessary ease of manipulation being quickly acquired by one familiar with the anatomy of the region; carelessness may make the first and last visit of one's client identical. So applied it gives no more discomfort than a 1 per cent solution, and is greatly more effective. Cocain, thus used, is devoid of danger and has great therapeutic value in the early stage of engorgement, and by repeated use in the chronic stage of an inflammation; but there *is* danger from it in the hands of "those who stalk where angels fear to tread." Its therapeutic future is great, for it is more than an anesthetic, *because of the way in which it causes anesthesia.*

This proceeding goes to the root of the trouble. It relieves the local disease instead of removing the products of the disease; it may be varied by anything the operator deems better for his purpose; it is not final in the sense of excision. It obviates the use of chromic, mono and tri-chloracetic acids, and

[7] This is nature's filter, and a reason for believing that intra-nasal pathological changes are of central origin and only limitedly due to external causes. A noxious agent inspired is engaged by the nasal mucous membrane which immediately becomes turgid to prevent its further progress inward, and is then expelled by a flood of secretion before it can secure lodgment; or, if it secures a hold, it is detached by sneezing. When a solution of continuity of tissue exists, a possible *point d'appui*, the ressentment of its presence is more violent, and its expulsion more prompt. *Any* operation dulls this reflex action.

galvano-cautery, to all of which there are objections. It renders excision of the hypertrophied turbinated bodies unnecessary unless by pressure upon the septum, or floor of the nose, ulceration is induced. As the middle and lower straights answer chiefly the purpose of drainage, these bodies may usually be neglected, as they grow smaller with the freedom insured to the upper straight, and distressing sequences are avoided. In addition to the objections named must be noted the passage of *cold* air into the middle ear of the side operated, a discomfort which can not be relieved, as the natural protection has been removed. That the operation influences anything but a very temporary ear trouble, which may be helped more simply and less mischievously, is not my experience.

For the foregoing reasons we conclude that it is wiser not to diminish the capacity of the organ and hasten the atrophic process and promote sclerosis by the desiccating influence of inspired air, insufficiently warmed and moistened. If the turbinated bodies were always excised when excessive few individuals would escape, for it has been stated that this condition has been found in the *fœtus in utero*. Nations have come and gone retaining their turbinated bodies, as they probably had no no surgeons to whom their removal was so important.

The hypertrophied pharyngeal tonsil, or so-called adenoids, have their share in the above comments. Their removal by operation will not cure the vice that causes them, but may result in immediate and deplorable ear trouble, and not infrequently in subsequent changes in the pharyngeal space, which becomes abnormally large after the age of puberty, and filled with hard nodules which collect and retain the secretions. These dry and cause constant irritation and sometimes ulceration, and the subject will probably be *somebody's* patient for the rest of his life. He, whose experience has been great enough to have seen such cases, will hesitate to add to their number, for the question of recurrence has not been satisfactorily considered. Hermet (*Bull. et. Mem. de la soc. de Laryngol. L'Otol.*, etc., Nos. 1 and 2, 1895) operated only fourteen cases of a total of 103, because he thinks, in addition to the risks from the anesthetic and hemorrhage, there is danger of the operation causing meningitis. He has observed adenoids for years in which there were no ill effects. He watches his cases carefully, and operates only when complications arise, as otitis media, headaches, or interference with development.

Excision of the drum-membrane, with the malleus and the incus, is a radical measure, justified by a supurative process whose focus can not be more simply reached. The enthusiasm of its advocates[8] has betrayed them into performing it in cases of sclerotic otitis, to which I have demurred from its inauguration,[9] and some of them ignore the reported cases of unmanageable suppuration resulting from it. Every operation ever devised has been reported successful, at first, in its immediate effect; the failures rarely "come to book," because only an exceptionally well-poised man is willing to record a disaster from an operation, of which others report only successes.

In sclerotic otitis the procedure is irrational, because it contributes nothing to the retardation of the disease whose origin is not local; because it deprives the organ of a protection provided by nature against certain mischievous agencies, and exposes the deeper-seated, more delicate and more vital tissues to the added action of such agencies; because it removes what, in the altered condition of the structures, is only *one* impediment, and not the chief one. A late announcement by Prof. Politzer, of Vienna, of the result of certain investigations he has been making[10] goes further to prove the irritationality of this measure in sclerotic otitis. He found the local explanation of the distressing tinnitus and profound deafness in this affection, in the sixteen cases dissected, to be "a circumscribed disease of the bony labyrinthine capsule," the cause of which could not be determined. "Two of the cases had gout, but whether in any of them syphilis had any causation in the deafness could not be decided." In this connection your attention is asked to some suggestions made in a paper read by your essayist at the Ninth International Medical Congress, here, in 1887, which may be found in its transactions; also to a paper,[11] "A Contribution to the Management of General Atrophy (sclerosis) of the Conducting Apparatus of the Ear," which states: "My reliance has been almost entirely upon vapor of iodin, with good, though not with uniformly satisfactory results."

[8] One of them has informed me within the past year that he has abandoned it.

[9] The primary physiological purpose of the membrana tympani. Trans. Am. Otol. Soc., 1888.

[10] *Archives of Otology*, Vol. XXIII., No. 4.

[11] *Amer. Journ. Med. Sci.*, April, 1887.

The significance of this statement is interesting in view of the suggestion of Prof. Politzer, "considering the benefit often observed from the internal use of iodid of potassium, or iodin, in various diseases of the bones, I would urge * * * that we should resort to the energetic exhibition of one or the other of these remedies internally." The disease is a hyperostosis, and the alteration occurs in the region of the oval window, involving the foot-plate of the stapes, and explains the difficulty and failure of stapedectomy, devised by Dr. Blake, of Boston, for the relief of such cases, and which excited so much hope among us. It *should* finally dispose of the operation of excision of the drumhead and ossicles in sclerosis, or "dry catarrh," for we should bring to bear upon our own work the *common* sense that rules in other relations of life.

In our eagerness to benefit our fellows we have not neglected "the mirrors of the soul."

The proposition to extract the crystalline lens in myopia of high degrees does not seem to have appealed to our spirit of enterprise. Why?

The extraction of an opaque lens in a case of monocular cataract has its advocates, but it gives no advantage, as an aphakic eye in no way balances an eye still retaining its lens. It is justifiable when urged by the patient upon the ground of cosmetics.

Lens opacities pursue such an erratic course that *artificial ripening* should be resorted to with hesitation and care, and in selected cases. Initial cataract may always be initial cataract; the opacity may increase for a time, and then remain at some point of development short of maturity, with useful vision; one may go to maturity and the other, in the same individual, may clear up entirely; all of these conclusions I have seen. That local, or general treatment will lead to a comfortable termination of lens opacity, once begun, can not be determined in view of what its course might have been, but proper diet, regular habits, hot baths, and the regulation of the body functions, have seemed to me to at least retard their development. At the period of life at which such opacities usually occur, this is important; for every shock contributes to the shortening of life, especially in old people, and delay in the development of the opacities may retain useful vision until death, and thus obviate such shock. Many such cases have reached this termi-

nation under my observation, due, as I believe, to my management, for some of them have gotten greatly improved vision. That this always persists is not claimed, but it has done so in a number of cases which have remained under my observation, notably a man of 68 years of age, who had lost his ability to read from symmetrical striated opacities of the lower half of both lenses. His vision was improved to ability to read in less than a year's time, his distress on account of failing vision was relieved, the cause of his trouble was never explained to him, and he read comfortably to the day of his death, six years later. There was no evidence of choroidal or retinal trouble. Serous apoplexy caused his death.

Many of you remember Dr. Flodoardo Howard (of whose case I unfortunately have no notes, and speak from memory). In the summer of 1880, I sat by him on a train leaving the city, and he confided to me that he would soon have to discontinue practice because of double cataract. He had been advised by a colleague that he must wait for maturity and operation, and in his distress he asked me if something could not be done to enable him to continue his work; for while he could write a prescription, he could not read it afterwards, and was growing worse. I told him I did not know his condition, whereupon he said he would like me to examine his eyes. After examination at my office I told him not to sit idle, but to try other means, and he might avoid operation. In about a year, I saw him reading placidly the *Evening Star* on a moving train, and I am under the impression that he always retained useful vision without operation. There were fundus changes.

I have not seen since June, 1894, a woman of 76 years of age, who was under my care the previous winter, at which time she was not able to read or sew, and wandered about the house in an objectless way. She could recognize no one by sight. Her daughter wrote me from Colorado, some weeks ago, that her books are still giving her pleasure, as they had done for more than a year. I found no evidence of fundus changes in this case; striated opacities of both lenses, confined to no segment. $V = \frac{20}{200}$. What are the probabilities of life at 76?

Another woman, 60 years of age, whom I first saw in December, 1893. $V = \frac{2}{5}$, each. By March, 1894, it had improved to $\frac{2}{3}$, with each eye. She went abroad to spend the summer in traveling. In November her vision was less than $\frac{2}{4}$. Now

V. R. $= \frac{3}{4}$, and V. L. $= + \frac{3}{5}$. Diffuse striated opacity of both. No choroidal changes to be seen. In the left eye the striæ are fewer and shorter than in the beginning; in the right eye the opacity is less dense. The progress of the opacities has been at least retarded for two years of keen pleasure.

This may only have happened, and have been due to no influence that I exerted, and I will not multiply cases. The affection is often one of senility, and what retards one will influence the other. Such results seem to me better than to wait, with hands folded, for maturity, or than an artificial ripening, although it may deny glory to the knife and diminish risk to the patient. In my experience, local treatment has not been profitable.

Graduated Tenotomy. "A sparrow can not fall to the ground," etc. No individual can be so small, no act can be so correct (humanly speaking), and no principle can be so great, that it will have no sins to answer for. Homeopathy may be the greatest blessing mankind has known, and yet it has been vicious in showing how much *parade* may be made in doing what leaves the observer in doubt if *anything* has been done; so little that "if it does no good, it may do no harm." An operation introduced about ten years ago would seem to be a direct descendant of homeopathy, as it has the ear marks; everybody must *believe* in it; everybody must do it; it must be done often—that homeopathy of operations, graduated tenotomy of the extrinsic muscles.

Although in some instances, doubtless great comfort has followed this operation, none other ever adopted has probably caused so much irritation and anxiety, has done as much mischief as possible good; has put the client to so much unnecessary expense, has fostered such fine-drawn, unavailing conclusions, or has excited so much contemptuous amusement among our professional brethren. It has its earnest advocates among those competent to judge, and therefore has its merits. It should be a last resource, and the surgeon should know when *not* to do it.

While, by some a disturbance equal to two degrees is considered physiological, in the opinion of others a variation of half a degree justifies *snipping;* and the literature of the past eight years is filled with every kind of experience, elaboration and devisement in this connection. A perfect muscular balance has

been secured by operation without relief, a half degree of heterophoria has remained with distress. Both conditions exist with comfort; even two degrees of muscular unbalance are found unassociated with uneasiness. That heterophoria may be mechanically developed, or increased, by the usual tests, I think the experience of all observers will prove. The explanation of the inconsistencies named is to be found in the innervational peculiarities of the individuals (the patients). With heterophoria, anomally of refraction nearly always exists (I have never seen an exception), and with full correction of static refraction and the patience to secure its legitimate effect, *physiological* muscular balance may nearly always be secured, which is preferable to a mechanical balance, as the eye is an organ and not a machine. In perfect cycloplegia, arising from the use of inefficient agents, no matter what mechanical device is substituted, defeats the *perfect* correction of static refraction, and may explain the apparent necessity for tenotomy in many cases. A proper correction, especially when combined with the "prism-gymnastics" of Gould, will in most cases obviate tenotomy.

Fewer surgeons do this operation now than three years ago, and another three years will probably limit the number doing it as a routine practice to those whose youth is seeking experience.

As an instance that the operation has been unnecessarily done, a United States Senator, 57 years of age, consulted me in 1887 for failing vision, for which he had visited two prominent exponents of graduated tenotomy. He was alarmed by the increasing visual defect, but was without pain. They cut his muscle tendons three times and prescribed prisms, dismissing him with the information that he "had active trouble within the eye," for which they recommended nothing. Finding a choroiditis disseminata of both eyes with a history of syphilis in early life, followed by a double iritis, and a meningitis, a prescription for syphilis seemed more essential than a tenotomy. Was this case tabulated as a success to tenotomy? He said: "I am no better and no worse for the operation, so far as I can see;" yet, was the operation harmless?

In 1887 a young woman, who had been for two months under the care of an eminent colleague in a neighboring city, who has great faith in the efficiency of cylindrical glasses of low power, came to me because she had constant pain when her eyes were open. The weak cylindrical glasses (+.25 Dcy.) which she

had been wearing had added nausea to her pain. A correction of static refraction: R. E., + 1 Ds. ⊃ + .5 Dcy. *a* 90°; L. E., + 1.5 Ds. ⊃ — .5 Dcy. *a* 180°, relieved nausea at once, and in ten days greatly reduced pain. She became impatient because of difficulty in *reading* all she desired, consulted another, and then placed herself under the care of a specialist in New York. He had done *ten* tenotomies when I last heard of her, a year ago, and was intending to return to him for another. It is almost incredible. She was a teacher and has changed her occupation. Patience with the correcting glasses would have relieved her esophoria of 2°. I have given only two of a number of cases which have come under my observation, showing the value of a routine practice of graduated tenotomy.

No more fitting conclusion to this paper occurs to me than the title of one a short time ago, by Dr. A. Jacobi—*Non Nocere*.

THE RELATIONSHIP BETWEEN EYE-STRAIN AND EPILEPSY.

By Ambrose L. Ranney, A. M., M. D.,
of New York.

THE case which I shall report here, in connection with a few remarks of my own, has been selected from my records of a large number of somewhat similar cases because it illustrates one point to the oculist more forcibly than any other case which I have yet encountered, viz., *that the most competent and intelligent observer never knows how near he may be to a happy conclusion of his work upon "heterophoria," so long as any remaining trace of abnormal muscular conditions exists in the orbits.*

In this particular case, I had to deal with (1) a most intractable case of epilepsy; (2) one that had been drugged for years; (3) one that had been subjected to the treatment of injection of animal extracts (*a la* Pasteur); (4) one that had no apparent source of reflex irritation outside of her visual apparatus; and (5) one that for a long time failed to improve under my treatment, in spite of very careful refraction work and apparently satisfactory results from several graduated tenotomies.

If there exists to-day any further necessity of arguing with a few members of our profession who deny that epilepsy is ever produced by eye-strain, this case ought to modify their views.

Miss D., 30 years of age, single. Family history: The father is in good health; mother is very neurasthenic; has severe

headaches; weak lungs; astigmatism and hypermetropia. One brother has astigmatism. No hereditary nervous disease as far as known.

This patient, when first seen by me, was a remarkably developed woman. As a child she had always been well and strong. She had perfected herself at an early age in swimming and various other forms of athletic exercises. In any feat of strength or agility, she always excelled. Later, she became quite a remarkable musician. Her menstrual function appeared at the normal age. It has always been unaccompanied by any pain or physical disturbance.

Some years prior to my seeing this patient, she developed epilepsy. The seizures, which were of a severe type, (*grand mal*), have persisted at various intervals in spite of all the recognized treatment by drugs. She had been placed under the care of the most eminent specialists here and abroad prior to my seeing her, and later, when drugs had failed to accomplish anything, she had been treated for months by hypodermics of animal extracts (*a la* Pasteur), by Dr. Gibier of New York, in addition to the internal administration of various combinations of bromides. During this period of anxiety on the part of her parents and the patient herself, she had, from time to time, sought for some possible reflex cause for her epileptic seizures. Her teeth had been found perfect and were remarkably beautiful. No rectal conditions existed that could cause irritation. Her pelvic organs were normal, with the exception of a curvature of the coccyx. A suggestion had been made to her to have the coccyx removed; but its relationship to the epilepsy seemed too doubtful to justify the operation in the minds of others, who were consulted respecting it. She had no kidney disease. She was in no way hysterical, but rather unusually placid and free from nervous excitability.

In the early part of 1894, this patient was referred to me by Prof. A. A. Smith of New York. As she had never had any symptoms referable to the eyes, in her life, both the patient and her parents were naturally skeptical as to the existence of any "eye-strain." They consulted me, however, in utter despair—rather with the hope of finding something wrong in the eyes or eye muscles, than the expectation of doing so. The remaining portion of the history will show what steps were taken toward the happy solution of this complex eye problem.

At the first examination, March 15, 1894, the patient had $^{20}/_{20}$ vision in each eye. She tolerated + 1.50 S. She also disclosed esophoria 3°; R. hyperphoria $^{1}/_{4}$°; adduction 28°; abduction 6°; right sursumduction 2°; left sursumduction 2°.

The day following, homatropin was used. The vision in each eye was then brought up to $^{20}/_{20}$ with + 1.50 S.

Prisms of 1° in each eye were given for esophoria. The strength of the prisms was gradually increased (as fast as a surplus was shown) until March 19, when she showed (while wearing 3° prisms, base out), esophoria 8°; no hyperphoria; adduction 40°; abduction 1°. *The right internal rectus was then "button-holed,"* with an immediate result of esophoria 1°, abduction 8°.

During the next week the patient showed more esophoria and prisms were again put on. They were gradually increased as before, until on March 26 her eye-tests were (while wearing 3° prisms, base out, over each eye), esophoria $10^{1}/_{2}$°; adduction 42°; abduction 0°. During this week she had two attacks of *grand mal. All bromides and cerebrine injections were stopped at my orders.*

The left internus was freely button-holed. Immediate result, esophoria $^{1}/_{2}$°; abduction 13°.

March 26 to April 2. During this week the muscles were exercised with prisms daily; the patient had one *grand mal* attack.

April 2. The eye tests showed esophoria 1°; no hyperphoria; adduction 40°; abduction 9°; sursumduction, right 2°; left 2°.

April 2 to 17. During this interval esophoric prisms were again given and slowly increased as before. There were no epileptic seizures.

April 17. Eye tests, (wearing 3° prisms, base out, over each eye), esophoria 9°; no hyperphoria; adduction 46°; abduction 4° +.

Right internal rectus again button-holed. Immediate result esophoria $^{1}/_{2}$°; abduction 10°.

April 19. One grand mal attack.

April 23. Ordered + 1.00 spherical for constant use, as it was deemed wise to take into consideration the latent error of refraction.

April 24 to June 15. During this interval the patient was tested every other day. Her tests averaged: No esophoria; occasionally left hyperphoria $^{1}/_{4}$°; adduction 40°; abduction 10°.

She had seven seizures, but reported that they were not so severe, and not followed by as much headache and prostration as prior to the eye treatment.

June 15 to 25. During this time a $^1/_2°$ left hyperphoria prism was given and gradually increased, as patient showed a slight surplus, up to two degrees. Two seizures occurred during this time.

June 26. (Wearing a 2° left hyperphoric prism); eye tests, left hyperphoria 2°; no esophoria; adduction 40°; abduction 8°; right sursumduction 0°; left sursumduction 4°. Ordered 2° prism, base down, combined with 1.00 D. S. in left eye, as it was deemed wise for the patient to go away for the summer.

Further, as considerable operative work upon the eye muscles had been done rapidly, it was thought best for the patient to discontinue all eye treatment for about three months. During this time she could settle down to her new eye adjustments, and become accustomed to the new conditions. She left for the country with instructions to return in September following; to write, read or sew but little; and to live out of doors.

Let us see, up to this time, what has been accomplished (from the eye standpoint), during the past three months.

1. *A very large amount of "latent" esophoria has been disclosed and relieved by three graduated tenotomies.* In every instance, except in the last (prior to operation), while the patient was wearing prisms, the abduction fell enough below the normal point, (8°), to justify the amount of esophoria disclosed by the patient and to warrant an operative step for its relief. The abduction to-day stands at 8°, and the interni, (after three graduated tenotomies), are able to fuse images over 40° prisms. In other words, both the *interni and externi show normal power.*

2. Left hyperphoria, (at times suspected by me in the early tests of this patient), has now begun to disclose itself. The sursumduction tests show: Right 0°; Left 4°; the difference being *just twice the prism that she is wearing*, (2°). This warrants us in continuing it; and the patient shows a distinct surplus over the 2° prism, ($2^1/_4°$). In my experience, each degree of hyperphoria has far

greater clinical significance than of exophoria or esophoria. Even fractions of a degree are therefore important.

3. While there has been no marked improvement in the epileptic seizures, the patient is having no more attacks than before the eye treatment, in spite of the fact that the bromides and the animal extract injections have been suddenly withdrawn. In other words, the patient is as well without drugs as she ever has been for years with them.

4. The full refraction condition, (exhibited under homatropin), has not yet been corrected. The patient will not yet tolerate more than 1.00 spherical for constant use.[1]

5. Up to this date, I had feared that *the use of animal extracts* prior to my seeing this patient, had seriously hampered me in my work. Although I had seen, up to that date, but one case of epilepsy that had been treated by them, I had been seriously alarmed by a sudden and marked diminution of sight that followed an injection of some animal extract which the patient had been taking without my knowledge. The vision returned in a few days, but the case never did well afterward under my care. So strong was my conviction, as to the effect of these animal injections upon the treatment of heterophoria, that I felt compelled, before accepting this patient, to express great doubt as to good results following my work. Apparently, in this case, however, the results of eye treatment have not been modified in any way, by the use of animal extracts.

6. The most careful questioning of the patient regarding the apparent causes of the various epileptic seizures has thus far failed to establish any relationship between the attacks, and imprudence in eating or the menstrual function. They seem to occur without any exciting cause as far as the patient can discern.

With these comments as a digression, we are now prepared to continue the study of the clinical history of this case.

[1] Later the use of atropin showed some astigmatism in addition to the hypermetropia, that entailed a change of glasses for constant wear.

The patient returned to the city on September 11, and reported that she had had four epileptic seizures since leaving the city on June 28.

September 11 to October 22. During this interval the patient's eyes were tested frequently, but no more hyperphoria was disclosed. She had during this time five epileptic seizures.

October 23. A graduated tenotomy was performed on the left superior rectus to-day and the prism removed from her glasses. The next day the eye tests were: Left hyperphoria $^1/_4°$; adduction 40°; abduction 8°; right sursumduction 3°; left sursumduction 3°.

October 24 to December 11. During this interval the patient had six epileptic seizures.

December 12. Some doubt arose to-day in regard to the refraction of the patient as she tolerated cylinders. To thoroughly eliminate *this* feature of the case, a 1 per cent solution of atropia was instilled into each eye. Under the atropin the vision was brought up to $^{20}/_{15}$ in each eye with the following correction: O. D. + 1.00 D. S. ⊃ 0.50 Cyl. Ax. 90° O. S. + 0.75 D. S. ⊃ + 1.00 D. Cyl. Ax. 90°. Glasses were given for constant wear to fully correct this refractive error.

December 12, 1894 to April 5, 1895. During these four months the patient was under almost daily observation and her eye tests were perfect, *i. e.* no esophoria, no hyperphoria, adduction 38°; abduction 8°; right sursumduction 2°; left sursumduction 2°.

In spite of her improved eye-conditions and general good health she continued to have about two attacks of *grand mal* each month. Determined to leave no source of possible reflex irritation uncorrected, I again sent the patient to one of the leading surgeons in New York to have her spine and pelvis examined. He strongly advised against any operation for the slight curvature of the coccyx, as he did not consider it sufficient to cause any reflex trouble.

April 5, 1895. To-day the patient showed for the first time in some months, a very slight amount of left hyperphoria, and $^1/_2°$ prism was given. This was increased, during the next few days, to a one degree prism. As no more hyperphoria appeared during the next few days, a one degree prism, base up, was combined with the sphero-cylinder in her right eye.

Her eye tests at the present time, (February 6, 1896), are, no esophoria; left hyperphoria 1°; adduction 38°; abduction 8°; right sursumduction 1°; left sursumduction 3°.

The patient has not had a single seizure since the prism was given, over one year ago. She seems in perfect health.

April 1, 1896. The patient was seen to-day in the office, and her eye-tests were identical with those of April 5, 1895.

It may be well to draw the attention of the reader to some facts of interest to the oculist—outside of the remarkable termination of the eye treatment of this patient for epileptic seizures.

I would call particular attention to these facts in the clinical history presented:

1. Both the esophoria and hyperphoria of this patient were almost totally latent. In other words, the majority of oculists would probably have failed to discover it on a casual examination. The patient had learned (by years of practice), to unconsciously adjust for these congenital defects, and to simulate a close approach to a manifest orthophoria, (normal adjustment of the eye muscles).

2. Persistent watching of the effects of prismatic glasses judiciously given from time to time, and three graduated tenotomies (performed by me when the muscular tests warranted their employment), brought about the establishment of, apparently, perfect orthophoria for some months. The patient showed full power of abduction, adduction and sursumduction.

3. When the eye tests were persistently normal for some months and every point in refraction had been carefully determined and corrected, I was, naturally, at a loss to explain why the epileptic seizures persisted, and I was led to doubt if some other source of reflex disturbance had not escaped all the physicians who had examined and treated this girl.

4. In spite of this doubt, (and in connection with investigations of the spine and pelvis made by others at my suggestion), I still kept up an almost daily watch for some type of latent heterophoria.

In this search I was at last happily rewarded. The one degree of latent hyperphoria, (that was at last disclosed), proved to be the remaining source of reflex irritation in this case. Since the day of its discovery, no epileptic attacks have occurred. For the first time in many years, month after month has passed without an epileptic seizure. No drugs are to be thanked for this recovery.

Some deductions may be drawn, *respecting the eye treatment of epilepsy* for the benefit of those who have had little or no experience in this line of clinical work.

Within the next twenty years we will see every neurologist of note more or less expert in testing refraction for himself, and determining without outside aid the existence of defective equilibrium of eye-muscles. He need not be an oculist, in the true acceptation of that term. Diseases of the eye properly belong to a specialty, and are best treated by those who see the most patients of that class. But the neurologist should know, and sooner or later will be forced to know, whether his patient has near-sightedness, far-sightedness or astigmatism to complicate matters, and if the eyes tend to deviate from their normal and physiological conditions. The more he studies these conditions, the more will he find to interest him, and much to relieve that is now too often unrecognized in the sufferers who apply to him for aid. He will cease to give pills to patients with from three to twenty poisonous alkaloids combined, on the principle that the sportsman adopts when he uses a handful of shot, hoping that one may perchance kill his bird. He will study his cases more intelligently, and delve less into works of therapeutical speculation. This view is neither Utopian or visionary. Neither is it the result of rash enthusiasm, but an earnest conviction that has come after years of patient inquiry and careful observation in a large number of patients suffering from nervous derangements.

A famous French philosopher seems to have fully realized the absurdities of purely therapeutical medicine when he said:

"Nature fights with disease a battle to the death. A blind man armed with a club—that is, a physician—comes in to make peace between them. Failing in that, he lays about him with his club. If he happens to hit disease, he kills disease. If he hits nature, he kills nature."

It may be well for me to mention in this connection a few of the reasons why, in my judgment, the treatment of the eyes has totally failed, in the hands of some observers, to relieve or modify some nervous conditions that had withstood judicious medication for years; and why it is that subsequently, in more experienced hands, treatment of the same patients directed to their eye-muscles has led not infrequently to the happiest results.

1. I would call attention to the fact that *preconceived notions about old methods must be abandoned without prejudice* when a new method is to be tried.

2. Each observer must, of necessity, make himself *thoroughly familiar with all the details of the method* which he proposes to employ before he is competent to decide *pro* or *con* respecting its merits. This cannot be done exclusively by reading. No one can describe with a pen the many intricacies that are apt to arise in solving complex optical problems. It is certainly not beneath the dignity of even an eminent man to learn (by personal observation of the work of another whom he perhaps thinks is misled and by timely suggestions thus obtained) how facts that bear upon successful treatment may be determined that were, perhaps, at first obscure and difficult to ascertain.

3. With a full knowledge of the method, its intricacies, and its difficulties, *conclusions should never be too hastily arrived at* in any given case. It is always "better to be sure than sorry." Those who have had the largest experience may occasionally make mistakes in judgment, when a peculiarly complex problem is presented for solution. How much easier it is, therefore, for one with a limited experience to fall into error. The story is told that a selection of a pilot for a vessel laden with precious merchandise which was to enter a harbor full of sunken ledges and sand-

bars, was once being made. One by one, the applicants told a tale of uninterrupted successes. Finally, one pilot was accepted simply because he said "I ought to know the channel, as I've wrecked a ship on every rock in this harbor."

So it is with many cases of epilepsy, chorea, insanity, and kindred nervous affections. These patients have, as a rule, acquired and constantly practiced from birth *certain faulty combinations of the various eye-muscles* in order to enable them to use the eyes together.

They are often able by the aid of such unnatural combinations to *simulate* a condition of apparent equilibrium of adjustment of the eyes; although a very serious expenditure of nerve-force may be demanded of them in order to do so. They are naturally unconscious of the eye-strain; because they think everybody does as they do, in order to see. They often have no eye-symptoms. They practice these "tricks of adjustment" instinctively, not as an act of volition; and they have generally to be taught, by the aid of prismatic glasses and other recognized steps, to abandon them and thus to disclose the actual mal-adjustment of their eye-muscles which has entailed upon them this long continued leak of nerve-force and later on, an abnormal reflex excitability of the nerve-centers.

They are not unlike a tortuous and difficult channel in which the hidden difficulties to surmount do not always disclose themselves upon the surface. They demand and generally repay a careful and scientific scrutiny into the adjustment of the ocular muscles and latent errors in refraction. They require time and great patience on the part of the observer, as well as skill.

4. The old methods of testing the eye-muscles will have to be abandoned at no distant date. A phorometer is now essential to all accurate work. Moreover, the separate muscles should be individually tested and their power accurately measured.

In concluding this article, I would quote, as a summary of my work upon the eyes of epileptics, some conclusions

that I published in the *New York Medical Journal* during the early part of 1894, in connection with the detailed report of twenty-five cases of chronic epilepsy that were subjected to the eye-treatment for a period of sufficient duration to warrant a belief that the latent heterophoria had been developed and corrected.

1. In epilepsy I regard an examination of the eyes (for errors of refraction) and of the eye muscles (for heterophoria) as the first and perhaps the most important step toward a search for sources of reflex nervous disturbance.

2. No final conclusion should be reached regarding the presence or absence of heterophoria until sufficient time, patience, and skill has been bestowed upon the investigation by one who is thoroughly familiar with and practices the *later methods* for the *determination of "latent" heterophoria*.

3. All preparations of bromides and other drugs that tend to control the seizures should be withheld, as a rule, from an epileptic patient until all possible sources of reflex irritation have been scientifically sought for and, as far as possible, relieved.

There may be justifiable reasons, to my mind, for *exceptional departures* from this rule; but I wish to emphatically raise my voice here in protest against the prevalent system of drugging epileptic patients from the date of the appearance of the first fit without any attempts being made to ascertain what the causes of the epilepsy may be.

4. I strongly advocate the *employment of atropin in every case* before a final decision is reached regarding the refraction of an eye.

I also believe that in epileptic cases it is wise to insure a full correction of any existing astigmatism (by glasses to be worn constantly in well-fitted spectacle frames), and as near a full correction by spherical glasses of any latent hypermetropia that is detected as the patient can be made to tolerate, even if atropin has to be instilled at intervals into the eyes of the patient for several weeks to prevent a return of ciliary spasm.

I have observed many cases of chronic epilepsy that have been relieved of all convulsive seizures so long as the full effect of atropin upon the ciliary muscle was maintained.

5. *No promises that absolute cure can be effected by eye treatment should ever be made to an epileptic;* but it is usually safe for the physician and patient to hope that a radical correction of marked heterophoria and abnormal refraction will eventually be followed by decided and permanent benefits.

6. The results in all cases thus far treated by me seem to warrant the conclusion that at least *ninety per cent of chronic epileptics have been better without bromides*, after a satisfactory correction of their eye defects, than they ever were when subjected to the influence of drugs. *Some have apparently been cured.* By eye treatment, up to this date (February 1896), about 20 per cent of my cases have apparently been cured of epileptic seizures; but I doubt if so large a percentage of recoveries can be safely predicted without medication.

It should be remembered that a victim to chronic epilepsy who is rendered by any treatment as free from attacks without the bromides as when under their deleterious influence has been *very markedly benefited;* again, that if a marked diminution of the attacks has been effected, the patient has double cause for gratitude; finally, that if the attacks are arrested *in toto* without drugs, it is to-day one of the most remarkable facts recorded in medical literature.

7. In cases where negative results have been observed in spite of a satisfactory investigation and correction of marked heterophoria and abnormities of refraction, I would deem it wise (before resorting to drugs for epileptic seizures) to search for other sources of reflex peripheral irritation (such, for example, as bad teeth, phimosis, rectal or uterine disease, scars, etc.)

Furthermore, the detection of chronic kidney disease, syphilis, organic brain lesions, and depression of the skull, is most important prior to the beginning of eye treatment

or a search for other forms of peripheral reflex disturbances.

8. The treatment of heterophoria by *prismatic glasses alone is not curative;* nor, in my opinion, are very marked beneficial results to be expected from them. Prismatic glasses are valuable aids, however, in determing the existence and amount of "latent" heterophoria prior to the radical correction of such defects by graduated tenotomies.

9. *The duration of the eye treatment of epilepsy varies with the eye problems encountered.*

The establishment of orthophoria is not commonly effected in epileptics inside of one year; and long intervals of rest between the surgical steps may be demanded and thus extend this limit of time to two or even three years.

For the past five years I have refused to begin work upon the eyes of any epileptic unless I was assured that I could control the patient for a period of at least twelve months, and see the patient at such intervals as I deemed necessary during that period. Experience has taught me in this work that it is much safer to do it slowly than rapidly.

10. Too much stress can not be laid upon the importance of accurately centering all spherical and cylindrical glasses to the pupils when prescribed.

An imperfectly fitted frame may prove a source of great injury to a patient.

Moreover, a decentered glass may often lead a careful observer into serious error respecting heterophoria.

11. The objections that are raised before patients by many physicians and some oculists to the performance of a graduated tenotomy upon an eye muscle "because of its risk, danger of overcorrection, etc.," too frequently cause unnecessary alarm and often prevent patients from obtaining the relief that is within their grasp, and which prismatic glasses have not and will not afford.

The operation, as now performed, does not necessitate any confinement to the house, and all surgical dressings to the eye are avoided.

That the successful operator must possess skill and a high grade of technique (acquired by constant practice in that special line of surgery) is apparent; but I believe that the danger of overcorrection is very small in operating properly for heterophoria, and, in the hands of an expert, an overcorrection is very readily controlled and rectified. I do not recall a case within the past ten years where I have had a moment's anxiety resulting from an overcorrection, although I have in that time performed at least one thousand graduated tenotomies upon the muscles of the orbit.

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ABSTACTS FROM CURRENT NEUROLGIC LITERATURE.

By Wendell Reber, M. D.,
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Mental Changes Associated With Exophthalmic Goitre.

Maude, (*American Journal of Insanity*, October, 1895) in the *Medical Press and Circular*, 1895, LX, states: For the purposes of this paper I have taken twenty cases, with whom I am well acquainted, and with whose family histories and mental peculiarities I have been familiar for some years. The questions I wish specially to consider are the occurrence and frequency of definite insanity, and whether, short of insanity, there is not a typical psychical change. My twenty cases are all women, about equally divided in age between early womanhood and the sexual decline, all private patients and a large proportion in a higher rank of society than the ordinary hospital patient. None could be claimed as insane, but only two present at all normal states of mind.

The mental condition of all these people is difficult to describe, but is, in its particularities, very highly defined.

1. They present an extreme motor restlessness, resembling that which sometimes accompanies subacute mania and neurasthenia; many of these patients are continually moving their hands and faces, acquire tricks of movement, habit spasms of ordinary type, such as pulling the corners of their mouths, the buttons of their dress, and so on. True chorea is frequently associated with exophthalmic goitre, but has never been present in any of my patients, and has no connection with the sort of movement habit I describe; neither is this restlessness connected with the habitual tremor of the disease.

2. Another point is the ease with which these patients are startled. A very slight interruption or noise will disturb them for hours; this is generally due to the instability of their cardiac action.

3. These people become irritable, short-tempered, discontented, prone to take offense at, and quarrel with anything and everybody. In this they merely present the usual attributes of neaurasthenics. In addition the patients become untruthful, suspicious and intolerant of contradiction or advice. The memory becomes much impaired, especially memory of current details.

But the most distinctive mental change, to my mind, is that first described by Sir James Russell Reynolds, who gave it the apt name of chorea of ideas. The patient finds it impossible to think of anything consecutively; if she makes an effort to write or talk about anything, other ideas crowd into her mind and displace the original one; names and notions, often in no way connected with the thought, crop up in the stead of the one she wants.

I am quite aware, however, that any or even all of the conditions I have described may occur in ordinary neurasthenics or hysterics, but on viewing these central nervous changes as a whole, and in fairly large numbers, I have been struck by the dissimilarity of the assembled psychic changes as compared with those of neurasthenia or hysteria. In fact, some of my patients who have presented in its most typical form the cerebral action of Graves' disease have been farthest removed from neurasthenia and showed none of the physical or mental attributes of hysteria.

Researches on the Connections Existing Between the Neuclei of the Motor Nerves of the Eye on One Side and the Posterior Longitudinal Fascicle and Reticular Formation on the Other Side.

MAHAIM, (*Journal of Nervous and Mental Diseases*, December, 1895) working with Gudden's method, experimented upon two rabbits 1 day old. In the first experiment the author extirpated the right third and fourth nerves. In the second animal he extirpated the same nerves and the sixth nerve besides. The animals were allowed to live four months. Microscopical examination of numerous transverse sections showed a rapid increase in

volume, from before backward, of the posterior longitudinal fascicle of the normal side, while that of the operated side received hardly any new fibers. The author believes that these researches again prove the mixed character of the posterior longitudinal fascicle. At the levels between the nuclei of the third and those of the fifth nerves, the lateral part of this fascicle is composed of fibers which apparently serve to establish a connection between the nuclei of the motor nerves of the eye on one side and the reticular formation and substantia gelatinosa of the fifth nerve on the other.

Injury to the Skull in the Occipital Regions With Left Lateral Hemianopsia and Marked Contraction of Both Visual Fields.

At the meeting of the Philadelphia Neurologic Society, October 28, 1895, Drs. Mills and Myers reported an injury to the calvarium that on examination proved to be a fracture above the external occipital protuberance, extending over the mastoid process, and separating for the last two inches the lambdoid suture of the right side and two inches of the left lambdoid suture. Brain substance escaped through a rupture of the dura. A cavity in the brain about the size of a walnut was shown. Healing was uneventful, but about two weeks after the operation it was discovered that the patient's vision was much impaired. Dr. Randall made the following report on the examination of his eyes:

Vision—O. D. $\frac{6}{15}$, O. S. $\frac{6}{15}$, eyes wander out under cover. Fixes with right eye, left usually diverging. Field for form and color limited to a small area about the fixation point. Neither eye-ground shows a trace of present or past neuritis, and the intra and extra-ocular musculature is normal. Pupils fairly prompt.

Cerebral Tumor Diagnosed by an Opportune Ophthalmoscopic Examination.

(*Journal of Nervous and Mental Diseases*, January, 1896.) At the October meeting of the Philadelphia Neurologic Society Drs. Zentmayer and Burr exhibited a brain with tumor in the extreme anterior part of the right temporal lobe. The patient, a female, 32 years of age, unmarried, had been having attacks of sudden unconsciousness, vertigo, nausea, vio-

lent throbbing in the head, and more or less continuous headache, sometimes dull, sometimes excruciating. At the time she came to consult Dr. Zentmayer she exhibited neuro-retinitis in both eyes, with marked choking of the discs, slight contraction of the form fields, normal color fields and color perception. There were no scotomata. Vision was $\frac{15}{20}$. Reaction of the irides normal; Werneck's sign absent. No local palsies. Diagnosis, tumor of the brain. When the patient was seen a few days later, in consultation with Dr. Burr, she presented the following condition: General appearance good; highly emotional, but perfectly clear minded; gait and station good; knee jerks normal; no palsies of arms, legs or face; no trouble in speech or difficulty in swallowing; hearing good; heart and lungs normal; urine, no albumin, no sugar.

The autopsy confirmed the diagnosis made during life, revealing a non-encapsulated growth situated in the anterior portion of the right temporal lobe, beneath the cortex but of such size as to distinctly enlarge the lobe.

The case is interesting as an example of disease in one of the so-called silent regions of the brain, and as showing the necessity of ophthalmoscopic examination in cases of suspected intracranial new growth.

A Case of Sudden Blindness With Equally Sudden Restoration of Sight, and Subsequent Blindness of One Eye.

Dr. John W. Waughop, (*Journal of Nervous and Mental Diseases*, January, 1896) of the Western Washington Hospital for the Insane, reports, under the above title, an interesting case with the following history:

O. J., widower, 44 years of age, native of Norway, occupation, cook. Suffered an attack of cholera in Russia in 1866. Brain fever in 1868. Sunstroke in California in 1877; was unconscious sixty days and was fed with a tube. In November, 1877, was committed to Napa Asylum where he remained nine months and then escaped and went to sea for two years. In 1888, while on a steamer bound for the old country, he dropped into a profound stupor for several hours, from which the ship's surgeon could not arouse him. After consciousness returned, he felt as if he had awakened from a natural sleep.

On November 11, 1894, he laid down for a nap. When he awoke an hour later he was totally blind. Was still blind

when admitted into the hospital seven weeks later. Pupils responded to light; no irritation, pain, dizziness, or paralysis. During the first three months he had several spells of unconsciousness lasting about twelve hours. If not disturbed he slept them off and awoke from a natural sleep, but if disturbed he would jump to his feet and strike out violently with his fist. On March 25, 1895, while saying his prayers before going to bed, he noticed his sight had suddenly returned, the pain had all gone and he was so happy that he called his attendant and had a season of rejoicing with him and his fellow patients. The blindness had lasted four months and a half. With the return of his sight his health began to fail. Some organic trouble with the stomach began to be apparent. A marked feature was the intense rigidity of the abdominal walls independent of the presence of gas in the abdomen. Loss of vision recurred in the right eye. The other remained normal, there was no further recurrence of the spells of unconsciousness. Death, November 12, 1895. The autopsy revealed a circumscribed abscess at the base of the brain, occupying the space from the pons varolii to the optic chiasm, and involving the optic tract, the crura cerebri and the corpora quadrigemina. A carcinoma was found at the pylorus.

The Formation of New Nerve Cells in the Occipital Cortex of a Monkey Whose Occipital Lobes Had Been Completely Removed.

Up to the present time, it has been held by all investigators that the removal of the occipital lobes of monkeys and dogs causes complete blindness. Vitzou, of Bucharest, repeating this experiment on a monkey, observed that the animal began to notice objects and people again (with much difficulty) about four months after the operation. Fourteen months later the perception of objects much improved, the monkey being able to avoid obstacles, which was by no means the case during the first months following the operation.

The brain was now opened again, the trephine openings having been closed by a layer of strong connective tissue, and the space occupied previously by the occipital lobes was found completely filled out with a newly formed substance, which on microscopical examination was found to contain nerve fibres and

pyramidal (nerve) cells. There was more neuroglia and fewer nerve cells than in the occipital lobes of an adult, but nevertheless there had been a new formation of nerve tissue. This case, the author claims, proves the possibility of regeneration of nerve tissue in the brain if the nutrition of the other parts of this organ is maintained. The explanation is offered that the sense of vision improved by the presence of the newly formed nervous elements. Macalester, in reviewing this article in the *Journal of Nervous and Mental Diseases* for February, 1896, voices the present scientific sentiment when he says that "this observation is in opposition to the theory generally accepted, of the non-regeneration of nerve elements in the central nervous system."

PROGRAM FOR THE ATLANTA MEETING OF THE OPHTHALMOLOGICAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

MAY 5 TO 8, 1896.

LUCIEN HOWE, Chairman. | FRANK ALLPORT, Secretary.

Address of Chairman, Lucien Howe.

Report of special committee on "Detachment of the Retina, Its Etiology and Treatment."

Report of Chairman, R. E. Randolph. "Histological Changes in Retinal Detachment."

Subjects unannounced, F. C. Hotz, E. E. Helt, F. R. Weeks and T. E. Murrell.

"Operative Treatment of Detached Retina." John F. Fulton.

"Report of a Case of Detached Retina Occurring in Chronic Bright's Disease." L. F. Love.

"Electrolysis in the Treatment of Detached Retina." W. T. Montgomery.

"Consanguineous Marriages as a Cause of Retinitis Pigmentosa." E. Oliver Belt.

"The Nomenclature of Conjunctivitis." Dudley S. Reynolds.

"The Use of Caustics in Epithelioma of the Lids." F. T. Smith.

"The Treatment of Ectropion of the Lower Lid." A. E. Prince.

"Sub-Conjunctival Injections." E. J. Bernstein.

"A Case of Ectropion of the Upper and Lower Eyelids." F. C. Hotz.

"Gonnorrheal Conjunctivitis, Its Treatment." Louis J. Lautenbach.

"Grafting in Blepharoplastics." P. D. Kayser.

Report of special committee on "Optic Nerve Atrophy of Obscure Origin."

Report of Chairman, H. V. Würdemann. "Cases of Optic Nerve Atrophy of Obscure Origin Occurring in General Diseases."

"Obscure Cases of Optic Nerve Atrophy of Toxemic Origin." George E. de Schweinitz.

"Obscure Cases of Optic Nerve Atrophy of Peripheral Origin." Harry Friedenwald.

"Obscure Cases of Optic Nerve Atrophy Occurring in Cerebral Diseases." C. W. Kollock.

"Obscure Cases of Optic Nerve Atrophy Occurring in Spinal Diseases." G. Dunbar Roy.

"Atrophy of Optic Nerve Probably Due to Quinin." H. Burt Ellis.

"The Differential Diagnosis Between Simple Glaucoma and Optic Nerve Atrophy." B. Alexander Randall.

"Secondary Glaucoma." S. D. Risley.

"Causation and Management of Glaucoma." Leartus Connor.

"Concerning Central Scotoma, with Particular Relation to the Papillo-Macular Bundle and the Cortical Visual Centers." George de Schweinitz.

"The Relationship Between Diseases of the Eye and Brain." R. F. Le Mond.

"Treatment of Optic Nerve Atrophy by Mercurial Inunctions in Conjunction with the Hot Baths of Hot Springs of Arkansas." O. J. Short.

"The Value of Homatropin in the Diagnosis of Ametropia." Edward Jackson.

"Some Interesting Points Pertaining to Refraction." G. C. Savage.

"The Field of Fixation in Its Relation to Heterophoria." Casey A. Wood.

"Three Cases of Monocular Vertical Nystagmus." Henry Wilson Ring.

"A contribution to the Question of the Removal of the Lens in High Myopia." Herbert Harlan.

"Results of an Examination of the Vision of the Children of the Public Schools of Baltimore." Herbert Harlan and Hiram Woods.

"Slight Chorio-Retinal Lesions as a Cause of Asthenopia and Reduced Sight." H. Gradle.

"The Co-ordination and Inco-ordination of the Eye Muscles." C. M. Hobby.

"An Ophthalmometric Puzzle." C. P. Pinckard.

"A Case of Intra-Sclerotic Cyst and a Case of Cystic Tumor of the Orbit." J. Elliott Colburn.

"Report of Intra-Ocular Malignant Tumors." George F. Fiske.

"A Case of Chloroma." S. C. Ayres.

"Dermoid Tumors of the Cornea." A. R. Baker.

"The Application of the Galvano-Cautery in Pterygium Operations." Arthur G. Hobbs.

"Keloid of the Cornea." C. D. Westcott.

"Report of 100 Cataract Cases with a Special Device for Secondary Cataract." Lyman Ware.

"A New Needle for Secondary Cataract." A. J. Erwin.

"Idiopathic Choroiditis." Adelins E. Portman.

"Report of Some Cases of Choroiditis in Young Adults." Hiram Woods.

"Keratitis Interstitialis Annularis." H. Moulton.

"Bilateral Exopthalmus." H. Burt Ellis.

"Experiments Upon Rabbits, Made with a View to Establishing a Stump for the Better Fitting of Artificial Eyes." J. Herbert Claiborne.

"A Further Clinical Note on the Use of Pycktanin." H. B. Young.

PROGRAM FOR THE SECTION ON LARYNGOLOGY AND OTOLOGY OF THE AMERICAN MEDICAL ASSOCIATION,

— AT —

ATLANTA, GA., MAY 5-8, 1896.

TUESDAY, MAY 5TH—AFTERNOON SESSION.

Chairman's Address, G. V. Woolen, Indianapolis, Ind.

"Adenoids." Price Brown, Toronto, Canada.

Some Remarks on Adenoid Vegetations in the Vault of the Pharynx, based upon 100 Operations. G. Hudson MacKuen, Philadelphia, Pa. Discussion to be opened by Alexander MacCoy, Philadelphia, Pa.

WEDNESDAY, MAY 6TH—MORNING SESSION.

"Extra-Dural Abscess from Mastoid Empyema," illustrated-steriopticon. B. Alexander Randall, Philadelphia, Pa.

"Primary Inflammation and Abscess of the Mastoid," report of case. Dunbar Roy, Atlanta, Ga.

"Contribution to Cerebral Disease Following Middle Ear Suppuration." M. S. Loderman, New York, N. Y.

"The Operation of Mastoid Antrotomy for the Cure of Obstinate O. M. P. C.," with description and presentation of the author's antrotome. H. A. Alderton, Brooklyn, N. Y. Discussion to be opened by Arthur G. Hobbs, Atlanta, Ga.

WEDNESDAY, MAY 6TH—AFTERNOON SESSION.

"Extirpation of the Larynx." Norval J. Pierce, Chicago, Illinois.

"Surgery of the Nasal Vestibule," with report of cases. Robert C. Myles, New York, N. Y.

"Electrolysis by a Current Controller for the Reduction of Spurs of the Nasal Septum," a supplementary report. W. E. Casselberry, Chicago, Ill. Discussion to be opened by W. H. Daly, Pittsburg, Pa.

THURSDAY, MAY 7TH—MORNING SESSION.

"Treatment of Chronic Non-Suppurative Otitis Media." S. MacCuen Smith, Philadelphia, Pa.

"Some Considerations with Regard to the Value of Intratympanic Operations in Deafness." F. H. Shastid, Galesburg, Ill.

"Iodin Applications in Eustachian Hypertrophy and Thickened Drumhead." A. J. Irwin, Mansfield, O.

"Phono and Phono-Massage Treatment for Deafness, Resulting from Suppurative Disease of the Middle Ear." Louis J. Lautenbach, Philadelphia, Pa. Discussion to be opened by E. L. Shurly, Detroit, Mich. H. A. Alderton, Brooklyn, New York.

THURSDAY, MAY 7TH—AFTERNOON SESSION.

"Post Nasal Malignant Tumors—Necessity of Early Diagnosis and Early Treatment." Jas. H. Shorter, Macon, Ga.

"Chronic Abscess at the Base of the Tongue." C. W. Richardson, Washington, D. C.

"Stricture of the Upper Third of the Trachea, Successfully Treated by Divulsion Performed Through the Larynx." John O. Roe, Rochester, N. Y.

"Uncommon Accidents Following Operations on the Nose and Throat." Max Thorner, Cincinnati, O. Discussion to be opened by E. F. Ingals, Chicago, Ill.

FRIDAY, MAY 8TH—MORNING SESSION.

"Nasal Hydrorrhea." D. Braden Kyle, Philadelphia, Pa.

"Clinical Notes on Ortho and Para-Chloro-Phenol." Conrad Berens, Philadelphia, Pa.

"The Paquelin Cautery, Adapted for Nose and Throat Work." J. Mount Bleyer, New York, N. Y.

"Electro-Cautery Amputation of the Uvulva." Hanau W. Loeb, St. Louis, Mo. Discussion to be opened by John O. Roe, Rochester, N. Y. James H. Shorter, Macon, Ga.

FRIDAY, MAY 8TH—AFTERNOON SESSION.

"Keloid Tumors of the External Ear." W. Sheppegrell, New Orleans, La.

"Treatment of Acute Inflammatory Process of the Labyrinth." J. F. Fulton, St. Paul, Minn.

THE WESTERN OPHTHALMOLOGICAL, LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

The first meeting of this society was held in Kansas City, on April 7. There were 51 enrolled at this organization. Among others the following papers were read:

"Two Cases of Opening of the Lateral Sinus for the Removal of Infectious Thrombus," recovery in one case." C. Barck, St. Louis, Mo.

"Diabetic Retinitis." Adolph Alt, St. Louis, Mo.

"When Should the Cautery be Used?" Wm. C. Pipino, Des Moines, Ia.

"The Use of Peroxid of Hydrogen in Diseases of the Throat, Nose and Ear." Wm. Scheppegrell, New Orleans, La.

"A Case of Asthma Due to Nasal Obstruction and Adenoids of Pharyngeal Vault." W. W. Bulette, Pueblo, Col.

"Tinnitus Aurium." J. W. May, Kansas City, Kan.

"Tubercular Laryngitis at High Altitudes." B. P. Anderson, Colorado Springs, Col.

"Purulent Brain Infection from Otitis Media." B. E. Fryer, Kansas City, Mo.

"Subjective Sensations." W. E. McVey, Topeka, Kas.

"What Operation for Senile Cataract Should the Beginner Select?" J. H. Thompson, Kansas City, Mo.

"The Clinical Examination of Deaf Mutes." S. T. Walker, Jacksonville, Ill.

"Adenoid Vegetations of the Vault of the Pharynx," report of cases. C. E. Clark, Kansas City.

"Errors in the Literature on Javal's Ophthalmometer for the Measure of Astigmatism." C. W. Grove, Kansas City, Mo.

"The Present Status of the Physiological Anatomy of Vocalization and Phonation." Edward H. Schaefer, Kansas City, Mo.

"Eye Affections as Related to Nasal Diseases." George E. Bellows, Kansas City, Mo.

"Organization a Protecting Factor for the Up-to-date Physician." J. D. C. Hoit.

The following officers were elected: President, Adolph Alt, St. Louis, Mo. First Vice-President, B. E. Fryer, Kansas City, Mo. Second Vice-President, Wm. C. Pipino, Des Moines Ia. Third Vice-President, J. H. Martindale, Minneapolis, Minn. Secretary, Hal Foster, Kansas City, Mo. Treasurer, W. L. Dayton, Lincoln. Neb.

Committee on Admission: J. H. Thompson, Kansas City, Mo., Barton Pitts, St. Joseph, Mo., H. W. Loeb, St. Louis, Missouri.

Committee on Publication: Hal Foster, Kansas City, Mo., C. Barck, St. Louis, Mo., J. W. Gaines, Kansas City, Mo.

The next meeting will be held in St. Louis, Mo., on the second Thursday and Friday of April, 1897.

PROGRAM OF THE SECOND ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL RHINOLOGICAL AND OTOLOGICAL SOCIETY.

NEW YORK, APRIL 17 AND 18, 1896.

President's Address,

BY EDWARD BRADFORD DENCH.

A meeting of the American Laryngological, Rhinological and Otological Society was held at New York, April 17 and 18, at which the following papers were read:

PAPERS.

"The Diagnostic Value of Ophthalmoscopic Examination in Cerebral Disease Depending Upon Affections of the Ear." Thomas R. Pooley. Discussed by D. B. St. John Roosa and J. Herbert Claiborne.

"A Contribution to the Study of Laryngeal Vertigo." A. C. Getchell.

"Report and Exhibition of a Case of Unusual Speech Defect." G. Hudson Makuen.

"Practical Experience with Autoscopy of the Larynx and of the Trachea." M. Thorner.

"Otitis Media Suppurativa with an Unusual Perforation of the Mastoid." E. E. Holt.

"Cancer of the Tonsil and Tongue," with report of four cases. T. C. Evans.

"The Report of a Case of Hemorrhage from External Auditory Canal." C. W. Richardson.

"Chronic Suppurative Inflammation of the Tympanic Cavity." S. MacCuen Smith.

"Etiology, Symptoms and Treatment of Rhinoliths," with report of a case. W. Scheppegrell.

"A Case of Rhino-Pharyngeal Fibroma With Projections Extending to the Orifice of Both Anterior Nares." Hanau W. Loeb.

"Pharyngeal Tuberculosis." Robert Levy.

"Diphtheria of the Naso-Pharynx." Walter J. Freeman.

"Report of Cases." J. E. Schadle.

"Pharyngeal and Laryngeal Neuroses." James E. Logan.

"Surgical Anatomy of the Mastoid." G. E. Brewer.

"A Study of Three Hundred Cases of Ear Diseases." Wendell C. Phillips.

"When Adenoids and Polypi Are the Chief Causes of Bronchial Asthma and Hay Fever." Arthur G. Hobbs.

"Otitis Media Catarrhalis Chronica," with a report of a new instrument facilitating the treatment. Joseph E. Willetts.

"A Contribution to the Study of the Diseases of the Accessory Nasal Sinuses." John R. Winslow.

"Diseases and Treatment of the Nasal Accessory Sinuses," with an analytic report. Robert C. Myles.

"Case of Angio-Neurotic Edema of the Larynx," with remarks. Dunbar Roy.

"Edema of the Larynx." O. B. Douglas.

"Acute Otitis Media as a Complication of Typhoid Fever." D. A. Hengst.

"The Mastoid and Intracranial Complications of Middle Ear Suppuration." E. B. Dench.

Report of a case. Howard S. Straight.

INTERNATIONAL CONGRESS OF OTOLOGY.

The sixth International Congress of Otology will be held in London in 1899. The following is the list of the international committee of organization:

America: Blake, Orne Green, Boston; Buck, Knapp, St. John Roosa, New York; Lawrence Turnbull, Randall, Charles H. Burnett, Philadelphia; Holmes, Chicago; Daly, Pittsburg; Berkan, San Francisco; Roaldes, New Orleans.

Austro-Hungary: Politzer, Vienna; Morpurgo, Trieste; Böke, Szenes, Budapest; Zaufal, Prague.

Belgium: Delstanche, Capart, Huguet, Goris, Brussels; Delie, Ypres; Schiffers, Liege; Eeman, Gand.

Denmark: Schmiegelow, Holger, Mygind, Copenhagen.

England: Ballance, Cumberbatch, Sir William Dalby, Dundas Grant, T. Mark Hovell, Urban Pritchard, Parnes, St. Clair Thompson, London; Creswell Baber, Brighton; Thomas Barr, Glasgow; Bronner, Bradford; Bronne, Belfast; Fitzgerald, Dublin; MacBride, Edinburgh; Pierce, Newcastle; Stone, Liverpool.

France: Gellé, Menière, Helme, Lermoyez, Lubet-Barbon, Gougenheim, Baratoux, Paris; Moure, Bordeaux; Noquet, Wagnier, Lille; Lannois, Lyons.

Germany: Lucae, Hartmann, Berlin; Bezold, Munich; Kirchner, Würtzburg; Brieger, Breslau.

Holland: Guye, Zwaardemaker, Amsterdam; Van Hoek, Nimègue; Moll, Arnhem.

Italy: Grazzi, Florence; Avoledo, Milan; Bobone, San Remo; Brunetti, Putelli, Venice, Chiucini, De Rossi, Ferreri, Rome; Corradi, Verona; Cazzolino, Naples; Gradenigo, Turin; Masini, Genoa; Secchi, Bologna.

Russia and Poland: Ruhlmann, St. Petersburg; Stepanoff, Stein, Moscow; Benni, Warsaw.

Spain: Suné Y Molist, Botey, Verdos, Barcelona; Gonzales Alvarez, Uruñuela, Madrid; Moresco, Cadiz; Casanova, Valencia.

Sweden: Swanberg, Ceterblad, Stockholm.

Switzerland: Secrétan, Lausanne; Rohrer. Zurich; Colladon, Geneva.

IN MEMORIAM.

Dr. James Pleasant Parker, founder and editor of these Annals, died in St. Louis, February 6, 1896, after a seven weeks' illness. He was a native of Alabama, had barely reached his 42d year and was unmarried.

After several years' experience as a pharmacist he decided to study medicine and in 1882 entered Jefferson Medical College, graduating thence in 1886. During his final year and the year subsequent to graduation he studied ophthalmology and otology in Philadelphia and New York. In 1887 he settled in Kansas City and four years later began the publication of the Annals. As a result of Parker's ceaseless industry and good management this literary venture was successful from the beginning, but, unfortunately, he lost all his money by the failure of a Kansas City Bank, just at the critical moment that he moved to St. Louis, in 1892. Instead of being discouraged by this disaster he seemed to regard it merely as an incentive to greater efforts. Henceforth, although his health was never very good, he worked literally day and night to advance the interests of the journal and, as his friends afterwards discovered, denied himself, for many months, even the ordinary necessaries of life that the Annals might be regularly issued and present a creditable appearance. This necessity for the practice of a close economy forced Parker to forego the pleasure and profit of attending medical meetings and prevented him from cultivating the acquaintance of many brother ophthalmologists, although well known to these through the interchange of letters.

These deprivations and the lack of proper rest and recreation doubtless contributed to the fatal termination of an attack of pneumonia, which he acquired in December of last year. In spite of all warnings he persisted in his labors until the last; indeed, his attendants believe that the January number of the Annals was gotten out at the expense of his life.

While more notable sacrifices of all that men hold dear have ere this been made in the temple of medicine, surely few worshippers have given of their substance more freely, more fully and with less complaint than this devoted practitioner of our art!

C. A. W.

NOTES AND ANNOUNCEMENTS.

Dr. A. B. Hale, of Chicago, will, in future, have charge of the Spanish Department of Ophthalmology.

By arrangement with the publisher the cost to authors of ANNALS reprints has been reduced one-third.

He also corrects a typographical error in his article on Ephred*ene* Hydrochlorate; it should have printed Ephred*ine*.

The eighteenth annual congress of the American Laryngological Association will be held at Pittsburg, May 14, 15 and 16.

Dr. F. B. Eaton has left Portland, Ore., and settled in San Jose, Cal. He has entered into partnership with Dr. W. A. Gordon, of the latter place.

The fifth meeting of the German Otological Society will be held this year at Nürnberg on the 22d and 23d of May. Prof. K. Burkner of Göttingen is Secretary.

We regret to hear that Dr. T. E. Murrell is compelled by ill-health to relinquish practice. We trust that the climate of New Mexico will soon restore him to his old time vigor.

Dr. H. V. Würdemann, of Milwaukee, has consented to act as German editor of the ANNALS' Department of Ophthalmology. We refer our readers to the present number for a sample of his painstaking work.

We are requested by Dr. Allport to announce that "the room for holding the meetings of the ophthalmological section at Atlanta will be at the 'Aragon' Hotel. Ophthalmologists will do well to engage rooms at this hotel."

El Siglo Medico of January 19, 1896, announces that the first Spanish Otological, Rhinological and Laryngological Congress meets for a three days' session in Madrid on October 18, 1896. The constitution and by-laws are already published.

Dr. W. A. Shoemaker, ex-house surgeon of the New York Eye and Ear Infirmary, has returned from Europe, where he has been continuing his studies in ophthalmology and otology for the last eighteen months. He has located at 2635 Washington Avenue for the practice of his specialty.

Dr. J. Campbell Smith, for five years larynologist and rhinologist at the Clifton Springs Sanitarium, N. Y., who last year resigned his position at that institution for the purpose of pursuing the study of his specialty in Europe, has returned and located at 2635 Washington Avenue, St. Louis, Mo.

In his article on the "Aftertreatment of Normal Cataract Extraction" published in the *Therapeutic Gazette* of February, Dr. Casey Wood inadvertently credited Würdemann, of Milwaukee, with the invention of the "base-ball" cataract mask, therein pictured. Credit is really due Dr. George E. Frothingham, of Detroit.

Dr. George F. Suker, of Toledo, O., reminds us that it is not correct in speaking of the action of Roentgen's X rays as photography. They probably give a shadow picture and consequently a different nomenclature is called for. Instead of photograph we may use the term scotograph, *skatos*, darkness, shade—sciagraph from skia, a shadow and graphein to write.

BOOK NOTICES.

NEW TRUTHS IN OPHTHALMOLOGY, as developed by G. C. Savage, M. D., Professor of Ophthalmology in the Medical Department of Vanderbilt University; President State Medical Society, etc. Forty-eight illustrations. Third edition, pp. 270. Nashville, Tenn., 1896.

The publication of the first edition of Dr. Savage's book provoked considerable discussion and much criticism. The third edition mainly consists of chapters of the earliest edition and certain additions which may be considered as replies to his critics, Hotz, Wilson and Eaton.

While it is perhaps not possible to entirely agree with the author as to the absolute verity of all the propositions laid down by him yet we are certainly indebted to him not only for his investigations, in a comparatively new field but also for the widespread discussion of the questions involved in these investigations. Why do some patients, having the same refractive errors, immediately accept and others reject the correcting lenses? Is insufficiency of the oblique muscles a factor in the production of asthenopia? Is there any calisthenic method by means of which tonicity of the superior and inferior recti and the obliques can be increased? What are the relations between the action of the intrinsic and extrinsic ocular muscles in the presence of the various forms of ametropia? Surely such queries pertain very much to the daily life and work of the ophthalmologist and his patients, and we ought to feel towards the man who partly or wholly answers them.

In Chapter IX, which is devoted to answering the question, "Can Presbyopia be Deferred by Sythmic Exercises of the Ciliary Muscles?" Savage advises regular ciliary gymnastics for the purpose of putting off the evil hour when lenses for near work are required. It may well be asked in this connection whether the time occupied in carrying out the instructions laid down by the author might not be just as well applied to putting on and taking off a pair of lenses that will bring to a sufficiently near point the ever receding p.p. Or, let us follow the example set by a certain friend of ours who, when print begins to blur and night reading becomes difficult, gives himself a week's vacation with rod or gun, and comes back to find his presbyopia of small annoyance.

The author might, perhaps, have had something more to say about the importance of estimating the amplitude of convergence and the range of accommodation in heterophoria and ametropia, and the expression of the former in meter angle terms. After all, these are of quite as much importance in clearing up "refraction" mysteries as is the determination of the amount and kind of heterophoria.

There is, also, in this book a tendency to consider but one element in cases of asthenopia from muscular anomalies and to ignore the condition of the nervous centers and the general health. For, as the author would probably be the first to admit, many of these are relieved by the removal of other peripheral and central "irritants," by securing improved digestion and proper rest and by taking exercise rational in kind and amount.

The volume is well printed on good paper and should find a place in every ophthalmologist's library. C. A. W.

THE TOXIC AMBLYOPIAS; THEIR CLASSIFICATION, HISTORY, SYMPTOMS, PATHOLOGY AND TREATMENT. The Alvarenga Prize, 1894. By Geo. E. de Schweinitz, A. M., M. D., Prof. of Ophthalmology in the Philadelphia Polyclinic, etc. Forty-six illustrations and nine plates; Lea Bros. & Co., 1896.

It is not often that one has the pleasure of reading a work that is at once a delight to the eye and a mine of information to the searcher after ophthalmological truths. However, this dainty volume, wtth its white and gold cover, its red and black title page, its heavy paper, clear type and well prepared illustrations, forms, in both these particulars, a model example of book making.

Dr. de Schweinitz's essay furnishes us with an epitome of all that is worth preserving of other men's contributions to the study of the toxic action of drugs and other agents upon the ocular strictures, and he has added to it an account of his own original investigations of the effects of alcohol, quinin, cinchonin, salicylic acid and filia mas upon the lower animals. It seems appropriate that this, the best, the most complete and the most original account of the amaurosis from quinin and other cinchona derivatives, should be given by an American ophthalmologist, if for no other reason than that by far the largest number of these cases have occurred and have been studied on this continent.

We note, especially, a contribution to the differential diagnosis between the amblyopia due to toxic agents and toxic retrobulbar axial neuritis, disseminated sclerosis, locomotor ataxia and optic atrophy, with central scotomata to be found, tabulated, on pages 85 and 86.

The illustrations, many of them micro-photographs on elucidation of the author's own notes, include the well-known pictures and diagrams drawn by Uhthoff and used by him when his classic essay on alcoholic amblyopia was first published in Graefe's *Archiv*.

The monograph is prefaced by a table of contents and ends with a well made index. We heartily recommend this valuable work to all our readers. C. A. W.

We respectfully present the following epitome to those students of ophthalmology who concern themselves with the cultivation of myopia in our American schools. It is copied from a Notice of Vol. II, Froebel's "Republic of Childhood," translated by Kate Douglas Wiggin and Nora Archibald Smith. The first of the three volumes, "Froebel's Gifts," has been received with great favor as of special value to both kindergartners and mothers. This volume continues the admirable scheme begun in that, and its scope is well indicated by the subject chapters: "The Gifts and Occupations of the Kindergarten, Perforating, Sewing, Drawing, Linear Drawing, Objections to Linear Drawing, Circular Drawing, Free-hand and Nature Drawing, Thread Games, Paper Interlacing, Leaf Interlacing, Weaving, Paper Cutting, Paper Folding, Peas Work, Modeling in Clay, Miscellaneous Occupations, Sand Work, General Remarks on the Occupations."

What a literary pabulum for our babes and sucklings and what an incentive to the lengthening of their oculum antero-posterior axes!

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE. By Charles A. Oliver, A. M., M. D.. Attending Surgeon to Will's Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital; Consulting Ophthalmologist to the State Asylum for the Chronic Insane of Pennsylvania. 1895, small quarto; 50 pp. University of Pennsylvania Press.

In this monograph Mr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist, but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease.

The volume, which is of convenient size for ready handling, is printed in clear, bold and easily read type; the subject matter

is arranged so that the various sensory and motor changes can be studied in natural sequence, and the whole is so indexed that ready reference to any desired symptom is obtainable.

We commend it as a useful guide and an ever ready companion that can be depended upon.

THE EXAMINATION OF THE EYE FROM THE STANDPOINT OF THE NEUROLOGIST. By Charles A. Oliver, A. M., M. D., Attending Surgeon to Wills' Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital, etc. Reprinted from "A Text-Book on Nervous Diseases by American Authors." Edited by Francis X. Fercum, A. M., M. D., Ph. F.

This reprint, which comes to us from the pen of the same author, has been read by us most carefully. The material, which embraces an accurate and a succinct description of all of the most certain of the plans that can be offered to the practical neurologist in the study of the ocular symptomatology of nerve disease, has been exceptionally well handled and brought to a perfection that has not been equalled in any similar work.

Without prejudice and bias we can unreservedly assert that the editor of the work is to be congratulated upon having had such a careful and valuable resume of the subject thus given to him for the benefit of his readers.

THE FUNCTIONAL EXAMINATION OF THE EYE. By John Herbert Claiborne, Jr., M. D., Adjunct Professor of Ophthalmology New York Policlinic; twenty-one illustrations, ninety-six pages. The Edwards & Docker Co., Philadelphia, 1895.

This book is written in a practical manner, well adapted to the needs of the student beginning the study of refraction and making clear a number of points that are more or less puzzling at first. In the chapter on the errors of refraction no mention is made of the latent hyperopia present in young subjects, the manifest hyperopia only having been taken into consideration. The author might, with advantage, have gone a little farther and devoted a chapter to the all-important subject of skiascopy, especially as he refers to no other objective tests.

The book is printed on good paper, in clear new type and reflects credit on the publishers. T. A. WOODRUFF.

J. OELLER. (*Atlas der Ophthalmoscopie*, Heft I, verlag von J. F. Bergmann, Wiesbaden, 1896.) The first number of this most recent addition to our atlases has appeared and far surpasses anything hitherto published for accurate detail and

artistic execution. Although expensive, (100 marks) $25.00 for the series of five parts, it amply repays the possessor not only by reason of the knowledge to be gained, but the exquisite drawing and coloring of the illustrations is a source of enjoyment to those having artistic instincts. Each number has fifteen plates, one on each page, 12x16 inches (seventy-five in the series), with descriptive text; to be obtained either in German or English; the translation by A. H. Knapp, of New York.

H. V. W.

A. Vossius, of Giessen. (Die Wichtigsten Geschwülste des Auges. Heft VII, *Augernätzliche Unterrichstafeln*, verlag von J. V. Kern, Breslau, 1895.) A series of fourteen plates, with text, showing sections of the eyeball about twice natural size: Carcinoma of conjunctiva, sarcoma of uveal tract, glioma of the retina, tumors of the nerve and tuberculosis of the uveal tract in twenty-two illustrations of but little artistic merit.

H. V. W.

A. Vossius, of Giessen. (Das Staphyloma der Cornea und Selera, Heft VIII, *Augenartzliche Unterrighstafeln*, verlag von J. V. Kern, Breslau, 1895.) A series of eight colored plates, fairly well executed, with explanatory text.

H. V. W.

Alexander, of Heidelberg. (*Neue Erfahrungen über Luetische Augenerkrankungen*, verlag von J. F. Bergmann, Wiesbaden, 1895.) This is a valuable short monograph of eighty-four pages, a continuation of his previous work, *Syphilis und Auge*, in which the literature has been carefully compiled to date. For general treatment he especially advises mercurial fumigations and the hypodermatic treatment by calomel, gray oil, salicylates, etc., together with iodid of potash. Locally, he advises subconjunctival injection of sublimat in parenchymatous keratitis, iritis and iridocyclitis, choroiditis and chorio-retinitis, retinitis and neuritis. H. V. W.

A. Vossius, of Giessen. (Die Croupöse Conjunctivitis und ihre Beziehungen zur Diphtherie, in a series of articles published by Karl Marhold in Halle. Samlung zwangloser Abhandlungen aus dem Gebiete der Augenheilkunde, 1896.) A mono-

graph of twenty-three pages describing diphtheritic conjunctivitis and referring to the literature. Many authors had endeavored to create a distinction between croupous and diphtheritic inflammation of the conjunctiva as well as of the air passages. His clinical experience made him agree with those writers who claimed the identity of the affections; twenty-two cases appearing like the croupous conjunctivitis of text books (exclusive of others which had a diphtheritic look) came under his care. All had fever, although the disease was in some cases monocular; corneal complications and shrinking of conjunctiva followed in some. The disease begins as a red spot on conjunctiva, or with inflammation, which rapidly becomes suppurative; lids swell and false membrane appears. Keratitis and sometimes loss of sight from corneal ulceration occur. Diphtheritic membranes generally exist on the tonsils or pharynx in the same case, or in other members of the family. Some cases die. Ocular infection usually arises from inoculation by the fingers. Treatment by antitoxin generally, and locally by cold compresses of 1:5000 sublimat or 1:1000 cyanid of mercury with nitrat of silver brushing to conjunctiva of lids in blennorhoreal cases is advised. H. V. W.

A MARINA, of Trieste. (*Ueber Multiple Augenmuskel-Lähmungen, und ihre Beziehungen zu den sie bedingenden, vorzugsweise Nervosen Krankheiten.* Verlag von Franz Deuticke, Leipzig und Wien, 1896.) A monograph of 358 pages, which treats extensively of all phases of the subject with illustrative cases, going over the following ground: Congenital cases, bulbar-paralysis, ophthalmoplegia ext., polyencephalomyelitis, sclerosis dissemenata, syringomyelia, poisons and infectious diseases, polymyositis, polyneuritis, hysteria, hemorrhages and brain diseases, etc., closing with a well-written account of the relations of the pupillary movements to the brain centers and diseases thereof. Literature on the subject is extensively quoted. H. V. W.

H. KRIENES, of Breslau. (Ueber Hermeralopie. Speziell. Akute Idiopathische Hemeralopie, verlag von J. F. Bergmann, Wiesbaden, 1896.) A monograph of 185 pages, well illustrated by diagrams of the visual fields. The author bases his book upon observations of twenty-nine cases of so-called acute,

special or idiopathic hemeralopia and five of chronic hemeralopia. He considers the etiology to be from a loss of nourishment and blinding, i. e., destruction of the relation between waste and repair of the visual substance (Sehstuffe). He thinks that in some cases he has seen a disposition to hemeralopia and hence a formation of the "*status hemeralopicus.*" He describes each case in detail, giving special attention to the color perception, showing that there is a constant diminution for colors, especially for blue, in the center and the periphery of the visual field. It is not proper to call hemeralopia a functional disease, for it always originates in some form of chorioretinitis. In most cases there is diminishment of vision in daylight, and in dim light there is disproportionate diminution of vision with contraction of the visual fields, especially for blue. Night vision is poor. Peculiar types of the visual field, such as reversal of the color fields, and fatigue symptoms are common. In some cases there was erythopsia; in many the field for blue was less than for other colors. He goes extensively into the literature on the subject.

H. V. W.

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It is a Stomachic Tonic, and relieves Indigestion, Flatulency, and has the remarkable property of arresting vomiting during pregnancy. It is a remedy of great value in Gastralgia, Enteralgia, Cholera Infantum, and intestinal derangements, especially those of an inflammatory character. For nursing mothers and teething children it has no superior. Besides mere digestive properties, Pepsin and Pancreatine have powerful soothing and sedative effects, and are therefore indicated in all gastric and intestinal derangements, and especially in inflammatory conditions. It is perfectly miscible with any appropriate medium. In certain cases the addition of Tr. Nux Vomica gives much satisfaction. Please write for Peter's Peptic Essence and you will not be disappointed. These preparations are held strictly in the hands of the medical profession, never having been advertised as popular remedies, nor put up with wrappers and circulars expatiating on the use of Hypophosphites or Digestives, thus educating the public in the use of these valuable compounds.

Samples Sent upon Application. **Express Charges at your Expense.**

For Sale by all Wholesale Druggists.

ARTHUR PETER & CO.
LOUISVILLE, KENTUCKY.

LISTERINE

IN DISEASES OF THE EYE AND EAR.

The same satisfactory results following the use of LISTERINE in all sub-acute and chronic inflammations of mucous membranes (whether urethral, vaginal, nasal or pharyngeal), is attained by its *judicious* employment upon the more sensitive surfaces of the eye and ear.

PURULENT CONJUNCTIVITIS.

If the period of active pus formation has continued for two days or more, the undiluted LISTERINE may be dropped into the eye every four hours. In those forms observed in infants showing a tendency to the formation of pseudo-membrane, LISTERINE is specially valuable, and of great service in all cases of muco-purulent or purulent conjunctivitis, preceded by the cleansing of the membrane with a solution of chloride of sodium.

GRANULAR EYE-LIDS.

A weak solution of LISTERINE affords a great relief from the heated, burning sensation. The scaly, sandy exfoliation of the margins of the lids, and the shedding of eye-lashes is checked, and the constant succession of minute styes arrested.

OTORRHŒA.

LISTERINE is largely resorted to in the treatment of diseases of both the middle and external ear, according to the varied views of the operators. Many precede the "dry treatment" by the gentle cleansing of the parts with LISTERINE, slightly warm, or LISTERINE and tepid water, equal parts. As inflammations of the middle ear are generally the result of an extension of inflammation from the naso-pharynx, treatment of these surfaces should be instituted from the onset of the attack. The nose and throat should be thoroughly cleansed with an alkaline solution, such as:

℞	Listerine,	f. ℥i
	Glycerini,	f. ℥iii
	Sodii bicarb., }	aa. ℥jss
	Sodii biborat, }	
	Aquæ q. s. ad.,	f. ℥iv *M.*

Sig. f ℥ i in ℥ ii warm water snuffed up the nose, and as a gargle for the throat three times daily.

Literature descriptive of LISTERINE upon application.

LAMBERT PHARMACAL CO.,

ST. LOUIS, MO.